| Condition | NCT Number | Title                                                                 | Status       | Delivery | Auto/ Allo? | Source MSCs | Age             | Phases Enrolment | First Posted | Publications |
|-----------|------------|------------------------------------------------------------------------|--------------|----------|-------------|--------------|-----------------|-----------------|---------------|--------------|
| GVHD      | NCT00136903 | Safety and Efficacy Study of Adult Human Mesenchymal Stem Cells to Treat Acute Graft Versus Host Disease (GVHD) | Completed    | IV       | Allo        | BMMSCs       | 18 Years to 70 Years | Phase 2        | 33            | 2005/8/29    |
| GVHD      | NCT00284986 | Safety and Efficacy of Prochymal for the Salvage of Treatment-Refractory Acute GVHD Patients | Completed    | IV       | Allo        | BMMSCs       | Months to 70 Years   | Phase 2        | 15            | 2006/2/1     |
| GVHD      | NCT00366145 | Efficacy and Safety of Adult Human Mesenchymal Stem Cells to Treat Steroid Refractory Acute Graft Versus Host Disease | Completed    | IV       | Allo        | BMMSCs       | 6 Months to 70 Years   | Phase 3        | 260           | 2006/8/21    | Kebriaei 202066 |
| GVHD      | NCT00603330 | Mesenchymal Stem Cell Infusion as Treatment for Steroid-Resistant Acute Graft Versus Host Disease (GVHD) or Poor Graft Function | Recruiting   | IV       | UNS         | UNS          | Child, Adult, Older Adult | Phase 2        | 100           | 2008/1/29    |
| GVHD      | NCT00826046 | Prochymal® Expanded Access for Adults Who Have Failed Steroid Treatment for Acute Graft Versus Host Disease (GVHD) | No longer available | IV       | Allo        | BMMSCs       | 18 Years to 70 Years   | Not Applicable | 2009/1/21    |
| GVHD      | NCT01589549 | Mesenchymal Stromal Cells for Acute Graft Versus Host Disease | Unknown status | IV       | UNS         | UNS          | 18 Years to 55 Years   | Phase 2        | 66            | 2012/5/2     |
| GVHD      | NCT01754454 | Safety and Efficacy of UC-MSC in Patients With Acute Severe Graft-versus-host Disease | Unknown status | IV       | Allo        | WJUCMSCs     | 18 Years to 70 Years   | Phase 2| 30       | 2012/12/21   |
| GVHD      | NCT01765634 | Mesenchymal Stem Cells for Treatment of Refractory Acute Graft-versus-host Disease | Unknown status | IV       | Allo        | BMMSCs       | 12 Years to 65 Years   | Phase 2        | 40            | 2013/1/10    |
| GVHD      | NCT01941394 | Mesenchymal Stem Cells Infusion for aGVHD Prophylaxis Transplantation | Unknown status | IV       | UNS         | UNS          | 18 Years to 60 Years   | Phase 2        | 70            | 2013/9/13    |
| GVHD      | NCT01956903 | Treatment of Refractory Acute Graft-Versus-Host Disease by Sequential Infusion of Allogenic Mesenchymal Stem Cell. MSCs Combined With CD25 Monoclonal Antibody and Calcineurin Inhibitors for Treatment of Steroid-resistant aGVHD | Completed    | IV       | Allo        | UNS          | 18 Years to 65 Years   | Phase 1| 15       | 2013/10/8    |
| GVHD      | NCT02241018 | A Study of CYP-001 for the Treatment of Steroid-Resistant Acute Graft Versus Host Disease | Unknown status | IV       | Allo        | iPSC-MSCs    | 14 Years to 65 Years   | Phase 2| 200       | 2014/9/16    |
| GVHD      | NCT02923375 | A Study of CYP-001 for the Treatment of Steroid-Resistant Acute Graft Versus Host Disease | Completed    | IV       | Allo        | iPSC-MSCs    | 18 Years to 70 Years   | Phase 1        | 16            | 2016/10/4    | Bloor 202071 |
| Study ID   | Title                                                                 | Status       | Type | Treatment                                                                 | Duration | Phase | Enrollment | Start Date   |
|-----------|----------------------------------------------------------------------|--------------|------|---------------------------------------------------------------------------|----------|-------|------------|--------------|
| NCT02336230 | A Prospective Study of Remestemcel-L, Ex-vivo Cultured Adult Human Mesenchymal Stromal Cells, for the Treatment of Pediatric Patients Who Have Failed to Respond to Steroid Treatment for Acute GVHD | Completed    | IV   | Allo BMMSCs                                                              | 2 Months to 17 Years | 3     | 55         | 2015/1/12    |
| NCT02379442 | Early Treatment of Acute Graft Versus Host Disease With Bone Marrow-Derived Mesenchymal Stem Cells and Corticosteroids | Terminated   | IV   | Allo BMMSCs                                                              | 4 Years to 99 Years | 1     | 1          | 2015/3/5     |
| NCT02687646 | Clinical Trial With MSC for Graft Versus Host Disease Treatment | Recruiting   | IV   | Allo AdMSCs                                                              | 18 Years to 65 Years | 2     | 15         | 2016/2/22    |
| NCT03158896 | Evaluation of Umbilical Cord-Derived Wharton's Jelly Stem Cells for the Treatment of Acute Graft Versus Host Disease | Active, not recruiting | UNS  | Allo WJUCMSCs                                                           | 18 Years to 75 Years | 1     | 10         | 2017/5/18    |
| NCT04328714 | Interferon γ-Primed Mesenchymal Stromal Cells as Prophylaxis for Acute Graft v Host Disease | Not yet recruiting | IV   | Allo BMMSCs                                                              | 1 Year and older  | 1     | 45         | 2020/3/31    |
| NCT02770430 | Mesenchymal Stem Cells as First Treatment Line for Resistant Acute Graft Versus Host Disease | Unknown status | IV   | UNS BMMSCs                                                              | Child, Adult, Older Adult | 2     | 90         | 2016/5/12    |
| NCT03631589 | MSC for Severe aGVHD                                                   | Recruiting   | UNS  | UNS WJUCMSCs                                                           | up to 65 Years      | 2     | 50         | 2018/8/15    |
| NCT03847844 | UCMSCs as Front-line Approach of Treatment for Patients With aGVHD     | Recruiting   | UNS  | Allo WJUCMSCs                                                           | 16 Years and older  | 2     | 40         | 2019/2/20    |
| NCT00972660 | Safety and Efficacy Study of Allogenic Mesenchymal Stem Cells to Treat Extensive Chronic Graft Versus Host Disease Multicenter Clinical Trial for the Evaluation of Mesenchymal Stem Cells From Adipose Tissue in Patients With Chronic Graft Versus Host Disease. | Unknown status | IV   | UNS                                                                  | Child, Adult, Older Adult | 2     | 52         | 2009/9/7     |
| NCT0122039  | Mesenchymal Stromal Cells as Treatment of Chronic Graft-versus-host Disease | Completed    | IV   | Allo AdMSCs                                                              | 18 Years to 65 Years | 2     | 19         | 2010/10/18   |
| NCT01522716 | Mesenchymal Stromal Cells as Treatment of Chronic Graft-versus-host Disease | Unknown status | IV   | Allo BMMSCs                                                              | 18 Years and older  | 1     | 11         | 2012/2/1     |
| NCT01526850 | Efficacy and Safety Study of Allogenic Mesenchymal Stem Cells for Patients With Chronic Graft Versus Host Disease | Unknown status | BM   | inject...  | 2 Years to 60 Years      | 2     | 100        | 2012/2/6     |
| NCT01765660 | Mesenchymal Stem Cells for Treatment of Refractory Chronic Graft-versus-host Disease | Unknown status | IV   | Allo BMMSCs                                                              | 12 Years to 65 Years | 2     | 60         | 2013/1/10    |
| NCT02291770 | Treatment of Chronic Graft-Versus-Host Disease With Mesenchymal Stromal Cells | Unknown status | IV   | UNS                                                                  | 14 Years to 65 Years | 3     | 130        | 2014/11/14   |
| Study ID   | Title                                                                 | Status        | Group                          | Years | Diagnosis                        | Recruitng | On eye | Allo | WJUCMS | C-exosome | Phase | Days | Years | Phase | Completion Date   |
|-----------|-----------------------------------------------------------------------|---------------|-------------------------------|-------|----------------------------------|-----------|--------|------|--------|-----------|-------|------|-------|-------|-------------------|
| NCT0213248| Effect of UMSCs Derived Exosomes on Dry Eye in Patients With cGVHD    | Recruiti ng   | On eye                        | 18    | Years to 70 Years                |            |        |      |        |            |       |      |       |       | 27 2019/12/30     |
| NCT04314483| Evaluation of the Role of Mesenchymal Stem Cells in the              | Unknown       | IV                            | UNS   | UNS                             |            |        |      |        |            | Phase | 2    |       |       | 25 2006/4/14       |
| NCT00361049| Treatment of Refractory (Acute or Chronic) Graft-Versus-Host Disease | Completed     | IV                            | Allo   | UNS                             |            |        |      |        |            | Phase | 1    |       |       | 49 2006/8/7        |
| NCT01749164| Allogeneic Mesenchymal Stem Cells for Graft-Versus-Host Disease      | Unknown       | IV                            | Allo   | WJUCMS Cs                       |            |        |      |        |            | Phase | 1    |       |       | 20 2008/9/9        |
| NCT00827398| Treatment of Steroid Resistant GVHD by Infusion MSC                 | Completed     | IV                            | UNS   | UNS                             |            |        |      |        |            | Phase | 1    |       |       | 50 2009/1/22       |
| NCT01318330| Safety Study of Homeo-GH (Bone Marrow Derived Clonal Mesenchymal    | Completed     | IV                            | Allo   | BMMSCs                          |            |        |      |        |            | Phase | 1    |       |       | 10 2011/3/18       |
| NCT01549665| Umbilical Cord Blood-derived Mesenchymal Stem Cells for the Treatment of Steroid-refractory Acute or Chronic Graft-versus-host disease | Unknown       | IV                            | Allo   | UCBMS Cs                        |            |        |      |        |            | Phase | 1    |       |       | 30 2012/3/9        |
| NCT01764100| Umbilical Cord Derived Mesenchymal Stromal Cells for the Treatment of Graft Versus Host Disease | Unknown       | IV                            | Allo   | BMMSCs                          |            |        |      |        |            | Phase | 1    |       |       | 10 2013/1/9        |
| NCT02032446| Mesenchymal Stromal Cells (MSCs) for the Treatment of                | Recruiti ng   | IV                            | Allo   | WJUCMS Cs                       |            |        |      |        |            | Phase | 1    |       |       | 47 2014/1/10       |
| NCT02055625| Mesenchymal Stem Cells as a Treatment for Oral Complications of     | Withdrawn     | On mucusal lesions             | UNS   | UNS                             |            |        |      |        |            | Phase | 1    |       |       | 0 2014/2/5         |
| NCT02359929| BMT Autologous MSCs for GvHD                                        | Recruiti ng   | IV                            | Auto   | BMMSCs                          |            |        |      |        |            | Phase | 1    |       |       | 24 2015/2/10       |
| NCT02824653| Allogeneic Bone Marrow Mesenchymal Stem Cells Infusion in Patients With Steroid-refractory GVHD | Completed     | IV                            | Allo   | BMMSCs                          |            |        |      |        |            | Phase | 1    |       |       | 10 2016/7/7        |
| ID          | Title                                                                 | Status                        | Route | Source | Ages            | Phase  | Completion Date |
|-------------|------------------------------------------------------------------------|-------------------------------|-------|--------|-----------------|--------|-----------------|
| NCT00759018 | Prochymal Expanded Access Treatment for Pediatric Patients Who Have Failed Steroids for Acute GVHD | No longer available | IV    | Allo BMMSCs | 2 Months to 17 Years | Not Applicable | 2008/9/25       |
| NCT04629833 | Treatment Of Steroid-Refractory Acute Graft-versus-host Disease With Mesenchymal Stromal Cells Versus Best Available Therapy | Not yet recruiting | IV    | Allo BMMSCs | 12 Years and older | Phase 3 | 210 2020/11/16  |
| NCT04744116 | Addition of Cord Blood Tissue-Derived Mesenchymal Stromal Cells to Ruxolitinib for the Treatment of Steroid-Refractory Acute Graft Versus Host Disease | Not yet recruiting | IV    | Allo UCBMSCs | 12 Years to 80 Years | Early Phase 1 | 24 2021/2/8    |
| NCT04692376 | MSC for Treatment of cGVHD After Allo-HSCT                               | Recruiting                    | IV    | UNS    | Phase 2         | 152 2020/12/31 |
| NCT02270307 | MSC and Cyclophosphamide for Acute Graft-Versus-Host Disease (aGVHD) Prophylaxis | Unknown status               | UNS   | UNS    | Phase 2) Phase 3 | 40 2014/10/21  |
| NCT01061099 | Repeated Infusions of Mesenchymal Stromal Cells in Children With Osteogenesis Imperfecta | Completed                    | IV    | Allo BMMSCs | up to 19 Years    | Phase 1 | 5 2010/2/2     |
| NCT02582775 | MT2015-20: Biochemical Correction of Severe EB by Allo HSCT and Serial Donor MSCs | Recruiting                   | IV    | UNS    | up to 25 Years   | Phase 2 | 84 2015/10/21  |
| NCT03106662 | Mesenchymal Stem Cell Infusion in Haploidentical Hematopoietic Stem Cell Transplantation in Patients With Hematological Malignancies | Completed                    | IV    | UNS    | Phase 3         | 6 2017/4/10   |
| NCT01045382 | MSC and HSC Coinfusion in Mismatched Minitransplants                   | Recruiting                   | IV    | UNS    | Phase 2         | 120 2010/1/11  |
| NCT01092026 | Unrelated Umbilical Cord Blood Transplantion With Coinfusion of Mesenchymal Stem Cells | Unknown status              | IV    | Allo UNS | 15 Years to 60 Years | Phase 1) Phase 2 | 20 2010/3/24   |
| NCT01763086 | Mesenchymal Stem Cells for Treatment of Poor Graft Function After Allogeneic Hematopoietic Stem Cell Transplant | Unknown status              | IV    | Allo BMMSCs | 14 Years to 65 Years | Phase 2 | 60 2013/1/8    |
| NCT01763099 | Mesenchymal Stem Cells Combined With Cord Blood for Treatment of Graft Failure | Unknown status              | IV    | Allo BMMSCs | 14 Years to 65 Years | Phase 2 | 60 2013/1/8    |
| NCT02083718 | Peripheral Blood Stem Cell Combined With Mesenchymal Stem Cells for Treatment of Poor Graft Function | Unknown status              | IV    | Allo BMMSCs | 14 Years to 65 Years | Phase 2 | 120 2014/3/11  |
**Clinical Trial In The Treatment Of Allogeneic Post-Transplant Cytopenias With Sequential Infusion Of Allogeneic Mesenchymal Cells Expanded In Vitro**

*Completed*  UNS  Allo  UNS  18  Years to 70  Years  Phase 2  15  2014/4/4

**Intra-Osseous Co-Transplant of UCB and hMSC**

*Active, Intraosseous Recruiting*  UNS  UNS  18  Years to 75  Years  Early Phase 1  6  2014/7/4

**MSCs With or Without Peripheral Blood Stem Cell for Treatment of Poor Graft Function and Delayed Platelet Engraftment**

*Unknown status*  IV  UNS  UNS  14  Years to 65  Years  Phase 2|Phase 3  120  2014/9/16

**Mesenchymal Stem Cells Co-transplantation in Alternative Donor Transplantation of Severe Aplastic Anemia.**

*Unknown status*  IV  Allo  BMSCs  14  Years to 50  Years  Phase 2  100  2014/9/25

**Mesenchymal Stromal Cells for Haplo Hematopoietic Cell Transplantation for Sickle Cell Disease**

*Withdrawn*  IV  Auto  BMSCs  12  Years to 40  Years  Phase 1  0  2017/10/2

**Intraosseous Administration of Mesenchymal Stromal Cells for Patients With Graft Failure After Allo-HSCT**

*Recruiting, Intraosseous Recruiting*  UNS  UNS  18  Years and older  Phase 3  20  2018/1/4

**Co-transplantation of MSC in the Setting of Allo-HSCT**

*Recruiting*  IV  UNS  UNS  up to 65  Years  Phase 2|Phase 3  120  2020/1/30

**Biochemical Correction of Severe EB by Allo HSCT and "Off-the-shelf" MSCs**

*Recruiting*  IV  Allo  BMSCs/UCBMCs  up to 25  Years  Phase 2  75  2009/12/16

**Safety and Efficacy of Patient's Own AD-MSC and AD-HSC Transplantation in Patients With Severe Aplastic Anemia**

*Unknown status*  IV  Auto  AdMSCs  14  Years to 70  Years  Phase 1|Phase 2  90  2015/4/3

**Mesenchymal Stem Cell Infusion as Prevention for Graft Rejection and Graft-versus-host Disease**

*Completed*  IV  Allo  BMSCs  up to 75  Years  Phase 2  30  2007/7/20  Baron 2010

**Safety and Efficacy Study of Umbilical Cord Blood-Derived Mesenchymal Stem Cells to Promote Engraftment of Unrelated Hematopoietic Stem Cell Transplantation**

*Completed*  IV  Allo  UCBMSCs  2  Years to 19  Years  Phase 1|Phase 2  10  2009/1/15

**Mesenchymal Stem Cell Administration in the Treatment of Coronary Graft Disease in Heart Transplant Patients**

*Suspended*  IV  Allo  BMSCs  18  Years to 80  Years  Phase 1|Phase 2  14  2015/6/15

**Mesenchymal Stem Cell and Islet Co-transplantation**

*Active, not recruiting*  UNS  Auto  BMSCs  18  Years to 69  Years  Phase 1  24  2015/3/10  Wang 2018
| Study ID | NCT Number | Title                                                                 | Site | Unkown status | Auto or Allo status | Years to | Phase | Recruitment Date |
|---------|------------|----------------------------------------------------------------------|------|---------------|---------------------|---------|-------|------------------|
| Islet transplant | NCT00646724 | Cotransplantation of Islet and Mesenchymal Stem Cell in Type 1 Diabetic Patients |    | Unkown status | Auto | 18 Years to 60 Years | 30 | 2008/3/28 |
| Kidney transplant | NCT02492308 | Induction With SVF Derived MSC in Living-related Kidney Transplantation |    | Unkown status | Auto AdMSCs | 18 Years to 60 Years | 120 | 2015/7/8 |
| Kidney transplant | NCT00658073 | Induction Therapy With Autologous Mesenchymal Stem Cells for Kidney Allografts |    | Complete | IV Auto BMMSCs | 18 Years to 60 Years | 165 | 2008/4/14 Tan 2012 |
| Kidney transplant | NCT00659620 | Mesenchymal Stem Cell Transplantation in the Treatment of Chronic Allograft Nephropathy |    | Unkown status | IV UNS | 18 Years to 60 Years | 20 | 2008/4/16 |
| Kidney transplant | NCT00734396 | Mesenchymal Stem Cells and Subclinical Rejection |    | Complete | IV Auto BMMSCs | 18 Years to 65 Years | 15 | 2008/8/14 Reinders 2013 |
| Kidney transplant | NCT00752479 | Mesenchymal Stem Cells Under Basiliximab/Low Dose RATG to Induce Renal Transplant Tolerance |    | Termination | IV Auto BMMSCs | 18 Years to 80 Years | 4 | 2008/9/15 |
| Kidney transplant | NCT02012153 | Mesenchymal Stromal Cells in Kidney Transplant Recipients |    | Recruiting | IV Auto BMMSCs | 18 Years and older | 6 | 2013/12/16 Perico 2018 |
| Kidney transplant | NCT02057965 | Mesenchymal Stromal Cell Therapy in Renal Recipients |    | Recruiting | IV Auto BMMSCs | 18 Years to 75 Years | 70 | 2014/2/7 Reinders 2014 |
| Kidney transplant | NCT02387151 | Allogeneic Mesenchymal Stromal Cell Therapy in Renal Transplant Recipients |    | Complete | IV Allo BMMSCs | 18 Years to 75 Years | 10 | 2015/3/12 Reinders 2015 |
| Kidney transplant | NCT02409940 | To Elucidate the Effect of Mesenchymal Stem Cells on the T Cell Repertoire of the Kidney Transplant Patients |    | Unkown status | IV Auto/ Allo BMMSCs | 18 Years to 65 Years | 17 | 2015/4/7 |
| Kidney transplant | NCT02490020 | A Perspective Multicenter Controlled Study On Application Of Mesenchymal Stem Cell(MSC) To Prevent Rejection After Renal Transplantation By Donation After Cardiac Death |    | Unkown status | IV WJUCMS Cs | 18 Years to 60 Years | 260 | 2015/7/3 Sun 2018 |
| Kidney transplant | NCT02492490 | Effect of SVF Derived MSC in DCD Renal Transplantation |    | Unkown status | IV Auto AdMSCs | 18 Years to 60 Years | 120 | 2015/7/8 |
| Kidney transplant | NCT02561767 | Effect of BM-MSCs in DCD Kidney Transplantation |    | Unkown status | IV Allo BMMSCs | 18 Years to 65 Years | 120 | 2015/9/28 |
| Kidney transplant | NCT02563340 | Effect of BM-MSCs on Chronic AMR After Kidney Transplantation |    | Unkown status | IV Allo BMMSCs | 18 Years to 65 Years | 60 | 2015/9/30 |
| Study ID | Title                                                                 | Status          | Sponsoring Organization | MSC Type                        | Age Group                  | Phase | Start Date  |
|---------|-----------------------------------------------------------------------|-----------------|-------------------------|---------------------------------|----------------------------|-------|-------------|
| NCT02  | Effect of BM-MSCs on Early Graft Function Recovery After DCD Kidney Transplant. | Unknown status  | IV                      | Allo                            | BM-MSCs                    | 18 to 65 years | Phase 1| 2015/9/30  |
| NCT03  | Mesenchymal Stromal Cells in Living Donor Kidney Transplantation       | Recruiting      | IV                      | Auto                            | UNS                        | 18 to 65 years | Phase 2| 2018/3/27  |
| NCT03  | Tolerance by Engaging Antigen During Cellular Homeostasis             | Recruiting      | IV                      | Allo                            | BM-MSCs                    | Years and older | Phase 1| 2018/4/20  |
| NCT03  | Mesenchymal Stem Cell Transplantation in the Treatment of Chronic Antibody Mediated Kidney Graft Rejection (ABMR) | Terminated      | UNS                     | Auto                            | BM-MSCs                    | Years and older | Not Applicable | 2018/7/13  |
| NCT04  | Feasibility and Safety of Allogeneic Adipose Mesenchymal Stem Cells (aMSCs) Delivery Into Kidney Allografts Procured From Deceased Donors With High Kidney Donor Profile Index (KDPI) | Not yet recruiting | IV                      | Allo                            | AdMSCs                     | 18 years and older | Phase 2| 2020/5/14  |
| NCT04  | A Study of Cell Therapy in COVID-19 Subjects With Acute Kidney Injury Who Are Receiving Renal Replacement Therapy | Not yet recruiting | IV                      | Allo                            | UNS                        | 18 years and older | Phase 2| 2020/6/24  |
| NCT01  | Mesenchymal Stem Cells After Renal or Liver Transplantation            | Unknown status  | IV                      | Allo                            | BM-MSCs                    | 18 to 75 years | Phase 1| 2011/9/5   |
| NCT01  | Human Mesenchymal Stem Cells Induce Liver Transplant Tolerance         | Unknown status  | IV                      | Allo                            | WJUCMSCs                   | 18 to 70 years | Phase 1| 2012/9/21  |
| NCT02  | MSC Therapy in Liver Transplantation                                  | Recruiting      | IV                      | Allo                            | BM-MSCs                    | Years and older | Phase 1| 2014/10/9  |
| NCT02  | Therapeutic Strategy and the Role of Mesenchymal Stromal Cells for ABO Incompatible Liver Transplantation Safety and Tolerance of Immunomodulating Therapy With Donor-specific MSC in Pediatric Living-Donor Liver Transplantation | Recruiting      | IV                      | Auto                            | UNS                        | Years and older | Phase 1| 2016/3/11  |
| NCT02  | Safety and Tolerance of Immunomodulating Therapy With Donor-specific MSC in Pediatric Living-Donor Liver Transplantation | Recruiting      | IV                      | Allo                            | BM-MSCs                    | 18 years to 18 years | Phase 1| 2016/11/6  |
| Conditions | NCT Number | Title | Status | Delivery | Auto/Allo? | Source MSCs | Age | Phases | Enrolment | First Posted | Publications |
|------------|------------|-------|--------|----------|------------|-------------|-----|--------|-----------|--------------|--------------|
| CD         | NCT02 445547 | Umbilical Cord Mesenchymal Stem Cell Treatment for Crohn's Disease | Completed | IV | Allo | WJUCMSCs | 18 Years to 70 Years | Phase 1 | 82 | 2015/5/15 |
| CD         | NCT02 000362 | Safety and Efficacy of FURESTEM-CD Inj. in Patients With Moderately Active Crohn's Disease (CD) | Unknown status | UNS | Allo | UCBMSCs | 19 Years to 70 Years | Phase 1 | 24 | 2013/12/4 |
| CD         | NCT01 915927 | Stem Cell Fistula Plug in Perianal Crohn's Disease | Completed | Perifistula injection | Auto | AdMSCs | 18 Years to 65 Years | Phase 1 | 20 | 2013/8/5, Dietz 201785 |
| CD         | NCT01 874015 | Transplantation of Bone Marrow Mesenchymal Stem Cell in Crohn's Disease | Unknown status | Intravenous injection | Auto | BMSCs | 18 Years to 65 Years | Phase 1 | 10 | 2013/6/10 |
| CD         | NCT01 541579 | Adipose Derived Mesenchymal Stem Cells for Induction of Remission in Perianal Fistulizing Crohn's Disease | Completed | Intravenous injection | Allo | AdMSCs | 18 Years and older | Phase 3 | 278 | 2012/3/1, Panés 201684, Panés 201886 |
| CD         | NCT01 144962 | Dose-escalating Therapeutic Study of Allogeneic Bone Marrow Derived Mesenchymal Stem Cells for the Treatment of Fistulas in Patients With Refractory Perianal Crohn's Disease | Completed | Perifistula injection | Allo | BMSCs | 18 Years and older | Phase 1 | 21 | 2010/6/16, Molendijk 201583 |
| CD         | NCT00 482092 | Evaluation of PROCHYMAL® Adult Human Stem Cells for Treatment-resistant Moderate-to-severe Crohn's Disease | Completed | IV | Allo | BMSCs | 18 Years to 70 Years | Phase 3 | 330 | 2007/6/4 |
| CD         | NCT00 543374 | Extended Evaluation of PROCHYMAL® Adult Human Stem Cells for Treatment-Resistant Moderate-to-Severe Crohn's Disease | Completed | IV | Allo | BMSCs | 18 Years to 70 Years | Phase 3 | 98 | 2007/10/15 |
| CD         | NCT00 294112 | Prochymal® Adult Human Mesenchymal Stem Cells for Treatment of Moderate-to-severe Crohn's Disease | Completed | IV | Allo | BMSCs | 18 Years to 70 Years | Phase 2 | 10 | 2006/2/20 |
| ID       | Title                                                                 | Status               | Age Range     | Phase       | Recruitment Start Date |
|----------|-----------------------------------------------------------------------|----------------------|---------------|-------------|------------------------|
| CD NCT04 073472 | Mesenchymal Stem Cells for the Treatment of Pouch Fistulas in Crohn's | Not yet recruiting | 18 Years to 75 Years | Phase 1 | 2019/8/29 |
| CD NCT04 519684 | Study of Mesenchymal Stem Cells for the Treatment of Ileal Pouch Fistula's in Participants With Crohn's Disease | Not yet recruiting | 18 Years to 75 Years | Phase 1 | 2020/8/20 |
| CD NCT04 519697 | Mesenchymal Stem Cells for the Treatment of Rectovaginal Fistulas in Participants With Crohn's Disease | Not yet recruiting | 18 Years to 75 Years | Phase 1 | 2020/8/20 |
| CD NCT04 519671 | A Phase I Study Evaluating Autologous Bone Marrow Derived Mesenchymal Stromal Cells for Crohn's Disease. | Completed | 18 Years to 65 Years | Phase 1 | 2012/8/8 |
| CD NCT01 659762 | An Australian Study of Mesenchymal Stromal Cells for Crohn's Disease | Completed | 18 Years to 55 Years | Phase 2 | 2010/3/23 |
| CD NCT03 555773 | Micro-fragmented Adipose Tissue and Complex Crohn's Anal Fistulas | Completed | 18 Years and older | Not Applicable | 2018/6/14 |
| CD NCT02 926300 | Long-term Safety and Efficacy of FURESTEM-CD Inj. in Patients With Moderately Active Crohn's Disease(CD) | Recruiting | 19 Years to 70 Years | Not Applicable | 2016/10/6 |
| CD NCT03 209700 | Re-treatment From a Phase I Study of MSC-AFP in Patients With Perianal Fistulas | Completed | 18 Years to 65 Years | Phase 1 | 2017/7/6 |
| CD NCT03 014219 | Phase I Crohn's Pediatric Sub-study of MSC AFP | Withdrawn | 12 Years to 17 Years | Phase 1 | 2017/1/9 |
| CD NCT03 449069 | Pediatric MSC-AFP Sub-study for Crohn's Fistula | Recruiting | 12 Years to 17 Years | Phase 1 | 2018/2/28 |
| CD NCT03 901235 | MSC Intratissular Injection in Crohn Disease Patients | Recruiting | 18 Years and older | Phase 2 | 2019/4/3 |
| CD | NCT01 540292 | Mesenchymal Stem Cell Therapy for the Treatment of Severe or Refractory Inflammatory and/or Autoimmune Disorders | Unkown status | IV | Allo BMMSCs | 18 Years to 75 Years | Phase 1| Phas e 2 | 20 2012/2/28 |
|---|---|---|---|---|---|---|---|---|---|
| CD | NCT04 548583 | Study of Mesenchymal Stem Cells for the Treatment of Medically Refractory Crohn's Colitis | Recruiting | Submucosal injection in colon | Allo BMMSCs | 18 Years to 75 Years | Phase 1| Phas e 2 | 24 2020/9/14 |
| CD | NCT04 519671 | Mesenchymal Stem Cells for the Treatment of Perianal Fistulizing Crohn's Disease | Recruiting | Peri-fistula injection | Allo BMMSCs | 18 Years to 75 Years | Phase 1| Phas e 2 | 20 2020/8/20 |
| CD | NCT04 791878 | Study of Mesenchymal Stem Cells for Pediatric Perianal Fistulizing Crohn's Disease | Not yet recruiting | Peri-fistula injection | Allo BMMSCs | 13 Years to 17 Years | Phase 1 | 10 2021/3/10 |
| IBD | NCT01 157650 | Treatment of Fistulous Crohn's Disease by Implant of Autologous Mesenchymal Stem Cells Derived From Adipose Tissue | Completed | UNS | Auto AdMSCs | 18 Years and older | Phase 1| Phas e 2 | 15 2010/7/7 |
| IBD | NCT03 299413 | Use of Mesenchymal Stem Cells in Inflammatory Bowel Disease | Active, not recruiting | IV | Allo WJUCMSCs | 18 Years to 75 Years | Phase 1| Phas e 2 | 20 2017/10/3 |
| IBD | NCT02 677350 | Allogeneic Human Mesenchymal Stem Cells (hMSC) in Patients With Fistulizing Crohn's Disease Via Perifistula Injections (GALENE) | Withdrawn | Peri-fistula injection | Allo BMMSCs | 18 Years and older | Phase 1 | 0 2016/2/9 |
| UC | NCT02 442037 | Human Umbilical-Cord-Derived Mesenchymal Stem Cell Therapy in Active Ulcerative Colitis | Unknown status | IV | Allo WJUCMSCs | 18 Years to 65 Years | Phase 1| Phas e 2 | 30 2015/5/13 |
| UC | NCT01 221428 | Umbilical Cord Mesenchymal Stem Cells Infusion for Ulcerative Colitis | Unknown status | IV | Allo WJUCMSCs | 18 Years to 70 Years | Phase 1| Phas e 2 | 50 2010/10/15 |
| UC | NCT01 914887 | Allogeneic Adipose Tissue-derived Mesenchymal Stem Cells for the Induction of Remission in Ulcerative Colitis | Unknown status | Endoscopic injection | Allo AdMSCs | 18 Years and older | Phase 1| Phas e 2 | 8 2013/8/2 |
| UC | NCT04 543994 | Study of Mesenchymal Stem Cells for the Treatment of Medically Refractory Ulcerative Colitis (UC) | Not yet recruiting | Submucosal injection in colon | Allo BMMSCs | 18 Years to 75 Years | Phase 1| Phas e 2 | 24 2020/9/10 |
| UC | NCT04 312113 | Angiographic Delivery of AD-MSC for Ulcerative Colitis | Not yet recruiting | Intrarterial injection | Auto AdMSCs | 18 Years to 65 Years | Phase 1 | 20 2020/3/18 |
| Study ID   | Title                                                                 | Status             | Age | Phase | Recruitment/Dosing | Year |
|-----------|-----------------------------------------------------------------------|--------------------|-----|-------|--------------------|------|
| NCT03609905 | Adipose Mesenchymal Stem Cells (AMSC) for Treatment of Ulcerative Colitis | Recruiting         | 18 Years to 65 Years | Phase 2 | Auto AdMSCs | 2018/8/1 |
| NCT0395200 | Mesenchymal Stem Cells in Multiple Sclerosis (MSCIMS)                  | Completed IV       | 18 Years to 65 Years | Phase 2 | Auto BMSCs | 2006/11/2 |
| NCT0781872 | Mesenchymal Stem Cells for the Treatment of MS                         | Completed IV       | 35 Years to 65 Years | Phase 2 | Auto BMSCs | 2008/10/29 |
| NCT0813969 | Autologous Mesenchymal Stem Cell (MSC) Transplantation in MS          | Completed IV       | 18 Years to 55 Years | Phase 1 | Auto UNS | 2008/12/23 |
| NCT01056471| Autologous Mesenchymal Stem Cells From Adipose Tissue in Patients With Secondary Progressive Multiple Sclerosis | Completed IV       | 18 Years and older | Phase 2 | Auto AdMSCs | 2010/1/26 |
| NCT0228266 | Mesenchymal Stem Cell Transplantation in MS                            | Terminated IV      | 18 Years to 50 Years | Phase 2 | Auto UNS | 2010/10/26 |
| NCT01364246| Safety and Efficacy of Umbilical Cord Mesenchymal Stem Cell Therapy for Patients With Progressive Multiple Sclerosis and Neuromyelitis Optica | Unknown status UNAllo WJUCMSCs | 18 Years to 60 Years | Phase 2 | | 2011/6/2 |
| NCT01377870| Evaluation of Autologous Mesenchymal Stem Cell Transplantation (Effects and Side Effects) in Multiple Sclerosis | Completed IV       | 18 Years to 55 Years | Phase 2 | Auto BMSCs | 2011/6/21 |
| NCT01606215| Stem Cells in Rapidly Evolving Active Multiple Sclerosis              | Completed IV       | 18 Years to 50 Years | Phase 2 | Auto BMSCs | 2012/5/25 |
| NCT01730547| Mesenchymal Stem Cells for Multiple Sclerosis                         | Unknown status IV  | 18 Years to 50 Years | Phase 2 | Auto UNS | 2012/11/21 |
| NCT01745783| Mesenchymal Cells From Autologous Bone Marrow, Administered Intravenously in Patients Diagnosed With Multiple Sclerosis | Recruiting IV      | 18 Years to 50 Years | Phase 2 | Auto BMSCs | 2012/12/10 |
| NCT01854957| Mesenchymal StEm Cells for Multiple Sclerosis                         | Unknown status IV  | 18 Years to 50 Years | Phase 2 | Auto UNS | 2013/5/16 |
| NCT01895439| Safety and Efficacy Study of Autologous Bone Marrow Mesenchymal Stem Cells in Multiple Sclerosis | Completed IV       | 18 Years to 65 Years | Phase 2 | Auto BMSCs | 2013/7/10 |
| Study ID | Title                                                                 | Status       | Type | Tissue Type | Years of Eligibility | Phase | Start Date | Principal Investigator |
|---------|-----------------------------------------------------------------------|--------------|------|-------------|----------------------|-------|-------------|------------------------|
| MS NCT02 034188 | Feasibility Study of Human Umbilical Cord Tissue-Derived Mesenchymal Stem Cells in Patients With Multiple Sclerosis | Completed | IV | Allo WJUCMSCs | 18 Years to 55 Years | Phase 1/Phase 2 | 2014/1/13 | Riordan 201895 |
| MS NCT02 035514 | Phase I-II Clinical Trial With Autologous Bone Marrow Derived Mesenchymal Stem Cells for the Therapy of Multiple Sclerosis | Completed | IV | Auto BMMSCs | 18 Years to 50 Years | Phase 1/Phase 2 | 2014/1/14 | Uccelli 201994 |
| MS NCT02 403947 | Safety and Efficacy of Intravenous Autologous Mesenchymal Stem Cells for MS: a Phase 2 Proof of Concept Study | Completed | IV | Allo UNS | 18 Years to 50 Years | Phase 2 | 2014/9/12 | Uccelli 201994 |
| MS NCT02 418325 | A Study of Allogeneic Human UC-MSC and Liberation Therapy (When Associated With CCSVI) in Patients With RRMS | Terminated | IV/Int rathecal injection | Allo WJUCMSCs | 18 Years to 60 Years | Phase 1/Phase 2 | 2014/12/30 | |
| MS NCT02 495766 | Autologous Mesenchymal Stromal Cells for Multiple Sclerosis | Completed | IV | Auto BMMSCs | 18 Years to 60 Years | Phase 1/Phase 2 | 2015/7/13 | |
| MS NCT02 587715 | A Study of Allogeneic Human UC-MSC and Liberation Therapy (When Associated With CCSVI) in Patients With RRMS | Unknown status | IV/Int rathecal injection | Allo WJUCMSCs | 18 Years to 60 Years | Phase 1/Phase 2 | 2015/10/27 | |
| MS NCT03 326505 | Allogeneic Mesenchymal Stem Cells And Physical Therapy for MS Treatment | Completed | Intrat hecal injection | Allo WJUCMSCs | 18 Years to 65 Years | Phase 1/Phase 2 | 2017/10/31 | Alghwiri 202096 |
| MS NCT03 778333 | Mesenchymal Stem Cells for Progressive Multiple Sclerosis_Sweden | Completed | IV | Auto BMMSCs | 18 Years to 65 Years | Phase 1 | 2018/12/19 | |
| MS NCT03 799718 | Safety and Efficacy of Repeated Administration of NurOwn (MSC-NTF Cells) in Participants With Progressive MS | Recruiting | Intrat hecal injection | Auto BMMSC-NF | 18 Years to 65 Years | Phase 2 | 2019/1/10 | |
| MS NCT04 749667 | Study of Mesenchymal Autologous Stem Cells as Regenerative Treatment for Multiple Sclerosis | Not yet recruiting | Intrat hecal injection | Auto BMMSCs | 18 Years to 55 Years | Phase 1/Phase 2 | 2021/2/11 | |
| Trial ID | NCT Number  | Title                                                                 | Status       | Consent type | Type of stem cells | Age | Phase | Enrollment Start Date |
|---------|-------------|----------------------------------------------------------------------|--------------|--------------|--------------------|-----|-------|----------------------|
| T1DM    | NCT00690066 | PROCHYMAL® (Human Adult Stem Cells) for the Treatment of Recently Diagnosed Type 1 Diabetes Mellitus (T1DM) | Completed    | IV           | Allo BMMSCs        | 12 years to 35 years | Phase 2 | 2008/6/4              |
| T1DM    | NCT01068951 | Treatment of Patients With Newly Onset of Type 1 Diabetes With Mesenchymal Stem Cells | Completed    | IV           | Auto BMMSCs        | 18 years to 40 years | Not Applicable | 2010/2/17 Carlsson 2015 |
| T1DM    | NCT01157403 | Autologous Transplantation of Mesenchymal Stem Cells for Treatment of Patients With Onset of Type 1 Diabetes | Unknow status | IV           | Auto BMMSCs        | 10 years to 40 years | Phase 2/Phase 3 | 2010/7/7              |
| T1DM    | NCT01219465 | Umbilical Cord Mesenchymal Stem Cells Infusion for Initial Type 1 Diabetes Mellitus | Unknow status | IV           | Allo WJUCMS C-s    | 3 years to 35 years | Phase 1/Phase 2 | 2010/10/13            |
| T1DM    | NCT01322789 | Safety and Efficacy of Mesenchymal Stem Cells in Newly-diagnosed Type 1 Diabetic Patients | Unknow status | IV           | UNS BMMSCs         | 12 years to 35 years | Phase 1/Phase 2 | 2011/3/25             |
| T1DM    | NCT01374854 | Umbilical Mesenchymal Stem Cells and Mononuclear Cells Infusion in Type 1 Diabetes Mellitus | Unknow status | IV           | Intraarterial injection Allo WJUCMS C-s | 18 years to 40 years | Phase 1/Phase 2 | 2011/6/16 Cai 2016 |
| T1DM    | NCT01496339 | Human Menstrual Blood-derived Mesenchymal Stem Cells Transplantation in Treating Type 1 Diabetic Patients | Unknow status | IV           | Allo MenSCs        | 18 years to 75 years | Phase 1/Phase 2 | 2011/12/21            |
| T1DM    | NCT02057211 | Mesenchymal Stem Cells to Intervene in the Development of Type 1 Diabetes: a Blinded Randomized Study | Suspended    | UNS           | Auto UNS           | 18 years to 40 years | Phase 2 | 2014/2/7              |
| T1DM    | NCT02138331 | Effect of Microvesicles and Exosomes Therapy on β-cell Mass in Type I Diabetes Mellitus (T1DM) | Unknow status | IV           | Allo UCBMSC C-exosome | 18 years to 60 years | Phase 2/Phase 3 | 2014/5/14             |
| T1DM    | NCT02893306 | MSC Administration for the Management of Type 1 Diabetic Patients | Unknow status | IV           | Allo BMMSCs        | 18 years and older 18 years | Phase 2 | 2016/9/8              |
| T1DM    | NCT02940418 | Use of Stem Cells in Diabetes Mellitus Type 1 | Recruiting | IV           | Allo AdMSCs        | Years to 35 years | Phase 1 | 2016/10/20            |
| T1DM    | NCT03406585 | Wharton's Jelly Derived Mesenchymal Stromal Cell Treatment of Adult Patients Diagnosed With Type 1 Diabetes | Recruiting | IV           | Allo WJUCMS C-s    | 18 years to 40 years | Phase 1/Phase 2 | 2018/1/23             |
| T1DM    | NCT03484741 | Mesenchymal Stem Cell Therapy for Type 1 Diabetes Mellitus Patients | Unknow status | IV           | Auto/Allo BMMSCs/WJUCMS C-s | 18 years to 45 years | Phase 1/Phase 2 | 2018/4/2              |
| T1DM    | NCT03920397 | Mesenchymal Stem Cells in Patients With Type 1 Diabetes Mellitus | Enrolling by invitation | IV           | Allo AdMSCs        | 16 years to 35 years | Not Applicable | 2019/4/18 Araujo 2020 |
| Study ID   | Title                                                                 | Status                        | Type          | Source(s)          | Ages | Phase | Start Date |
|-----------|-----------------------------------------------------------------------|-------------------------------|---------------|--------------------|------|-------|------------|
| T1DM NCT03 973827 | Wharton's Jelly Derived Mesenchymal Stromal Cell Repeated Treatment of Adult Patients Diagnosed With Type 1 Diabetes | Recruiting uns Allo WJUCMS Cs 18 Years to 64 Years Phase 1/Phase 2 | IV | BMSCs | 18 2019/6/4 |
| T1DM NCT04 061746 | Cellular Therapy for Type 1 Diabetes Using Mesenchymal Stem Cells | Recruiting IV Allo WJUCMS Cs 12 Years to 30 Years Phase 1 | IV | BMSCs | 50 2019/8/20 |
| T1DM NCT04 078308 | Mesenchymal Stem Cell Transplantation in Newly Diagnosed Type-1 Diabetes Patients | Active, not recruiting IV Auto BMSCs 8 Years to 40 Years Phase 1 | IV | BMSCs | 20 2019/9/6 |
| T1DM NCT01 143168 | Stem Cell Therapy for Type 1 Diabetes Mellitus | Unknown IV Auto/Allo BMSCs/WJUCMS Cs 18 Years to 50 Years Phase 1 | IV | BMSCs | 24 2010/6/14 |
| SLE NCT00 659217 | Effect of Mesenchymal Stem Cell Transplantation for Lupus Nephritis | Unknown status uns Allo UNS 18 Years to 60 Years Phase 1/Phase 2 | IV | BMSCs | 20 2008/4/16 |
| SLE NCT03 174587 | Evaluate the Safety of CS20AT04 Inj. in Subjects With Lupus Nephritis | Completed IV Allo BMSCs 18 Years to 69 Years Phase 1 | IV | BMSCs | 7 2017/6/2 |
| SLE NCT03 458156 | Umbilical Cord Mesenchymal Stem Cell Transplantation for Lupus Nephritis | Unknown status uns Allo WJUCMS Cs 18 Years to 60 Years Phase 1/Phase 2 | IV | BMSCs | 36 2018/9/17 |
| SLE NCT03 673748 | Treatment of Lupus Nephritis With Allogeneic Mesenchymal Stem Cells | Not yet recruiting IV Allo UNS 18 Years to 65 Years Phase 2 | IV | BMSCs | 39 2019/4/17 |
| SLE NCT03 917797 | Mesenchymal Stromal Cells (MSC's) in Renal Lupus | Recruiting IV Allo WJUCMS Cs 18 Years to 75 Years Phase 2 | IV | BMSCs | 39 2019/4/17 |
| SLE NCT04 318600 | Allogeneic Amniotic Mesenchymal Stem Cell Therapy for Lupus Nephritis | Completed IV Allo Amniotic MSCs 14 Years to 60 Years Phase 1 | IV | BMSCs | 16 2020/3/24 |
| SLE NCT04 522505 | Long-term Follow-up for Evaluating the Safety of CS20AT04 in Subject With Lupus Nephritis | Active, not recruiting UNS Allo BMSCs 17 Years to 70 Years Phase 1/Phase 2 | IV | BMSCs | 7 2020/8/21 |
| SLE NCT03 580291 | Human Umbilical Cord Mesenchymal Stem Cells Treatment for Lupus Nephritis (LN) | Not yet recruiting IV Allo WJUCMS Cs 18 Years to 60 Years Phase 2 | IV | BMSCs | 230 2018/7/9 |
| SLE NCT00 698191 | Mesenchymal Stem Cells Transplantation for Refractory Systemic Lupus Erythematosus (SLE) | Unknown IV Allo BMSCs 15 Years to 70 Years Phase 1/Phase 2 | IV | BMSCs | 20 2008/6/17 |
| SLE NCT01 539902 | Phase 2 Study of Human Umbilical Cord Derived Mesenchymal Stem Cell for the Treatment of Lupus Nephritis | Unknown status uns Allo WJUCMS Cs 16 Years to 65 Years Phase 2 | IV | BMSCs | 25 2012/2/28 |
| Disease | NCT Number | Study Title                                                                 | Status          | Study Type | Treatment                                                                 | Age                | Enrollment | Start Date | End Date   | Authors/References |
|---------|------------|-----------------------------------------------------------------------------|-----------------|------------|----------------------------------------------------------------------------|--------------------|------------|-------------|------------|-------------------|
| SLE     | NCT01 741857 | Umbilical Cord Derived Mesenchymal Stem Cells Transplantation for Active and Refractory Systemic Lupus Erythematosus | Unknown status  | Allo       | WJUCMS Cs                                                                  | 15 Years to 60 Years | Phase 1    | 2012/12/5   |            | Wang 2014<sup>109</sup>, Wang 2014<sup>108</sup> |
| SLE     | NCT02 633163 | Phase 2 Trial of Mesenchymal Stem Cells in Systemic Lupus Erythematosus (MISLE) | Recruiting      | IV Allo    | WJUCMS Cs                                                                  | 18 Years to 65 Years | Phase 2    | 2015/12/17  |            |                   |
| SLE     | NCT03 171194 | Pilot Trial of Mesenchymal Stem Cells for Systemic Lupus Erythematosus       | Completed       | IV Allo    | WJUCMS Cs                                                                  | 18 Years to 65 Years | Phase 1    | 2017/5/31   |            |                   |
| SLE     | NCT03 219801 | Umbilical Cord Derived Mesenchymal Stem Cells Therapy in Systemic Lupus Erythematosus | Unknown status  | IV Allo    | WJUCMS Cs                                                                  | 14 Years to 60 Years | Early Phase 1 |            |            |                   |
| SLE     | NCT03 562065 | Treatment of Refractory Systemic Lupus Erythematosus by Allogeneic Mesenchymal Stem Cells Derived From the Umbilical Cord | Not yet recruiting | IV Allo    | WJUCMS Cs                                                                  | 18 Years to 70 Years | Phase 1    | 2018/6/19   |            |                   |
| SLE     | NCT04 184258 | Treatment of Systemic Lupus Erythematosus With Pooled Allogeneic Mesenchymal Stem Cells | Recruiting      | UNS Allo   | OMMSCs                                                                     | 18 Years to 75 Years | Phase 1    | 2019/12/3   |            |                   |
| RA      | NCT01 985464 | Umbilical Cord Tissue-derived Mesenchymal Stem Cells for Rheumatoid Arthritis | Active, not recruiting | IV Allo    | WJUCMS Cs                                                                  | 18 Years and older  | Phase 1    | 2013/11/15  |            |                   |
| RA      | NCT01 547091 | Safety and Efficacy Study of Umbilical Cord-Derived Mesenchymal Stem Cells for Rheumatoid Arthritis | Unknown status  | IV Allo    | WJUCMS Cs                                                                  | 18 Years to 70 Years | Phase 1    | 2012/3/7    |            |                   |
| RA      | NCT03 828344 | Safety and Tolerability of a Single Intravenous Infusion of BX-U001 in Refractory Rheumatoid Arthritis | Not yet recruiting | IV Allo    | WJUCMS Cs                                                                  | 18 Years to 70 Years | Phase 1    | 2019/2/4    |            |                   |
| RA      | NCT03 691909 | A Clinical Trial to Determine the Safety and Efficacy of Hope Biosciences Autologous Mesenchymal Stem Cell Therapy (HB-adMSCs) for the Treatment of Rheumatoid Arthritis | Active, not recruiting | IV Auto    | AdMSCs                                                                     | 18 Years to 65 Years | Phase 1    | 2018/10/2   |            |                   |
| RA      | NCT03 798028 | The Safety and Effects of Mesenchymal Stem Cell (MSCs) in the Treatment of Rheumatoid Arthritis | Recruiting      | IV Allo    | UCBMS Cs                                                                  | 18 Years to 70 Years | Phase 1    | 2019/1/9    |            |                   |
| RA      | NCT03 186417 | Mesenchymal Stem Cells in Early Rheumatoid Arthritis                          | Recruiting      | IV UNS     | AdMSCs                                                                     | 18 Years to 80 Years | Phase 1    | 2017/6/14   |            |                   |
| RA      | NCT01 663116 | Cx611-0101, eASCs Intravenous Administration to Refractory Rheumatoid Arthritis Patients | Completed       | IV Allo    | AdMSCs                                                                     | 18 Years and older  | Phase 1    | 2012/8/13   |            | Álvaro-Gracia 2017<sup>77</sup> |
| RA | ID       | Study Title                                                                 | Status         | Participants | Location | Start Date |
|----|----------|----------------------------------------------------------------------------|----------------|--------------|----------|------------|
| 1  | NCT01873625 | Transplantation of Bone Marrow Derived Mesenchymal Stem Cells in Affected Knee Osteoarthritis by Rheumatoid Arthritis | Completed Intra articular Auto BMMSCs | 10 Years to 65 Years | Phase 2/3 | 2013/6/10 |
| 1  | NCT02643823 | Human Umbilical Cord-Mesenchymal Stem Cells for Rheumatoid Arthritis | Unknown status IV Allo WJUCMS Cs | 18 Years to 80 Years | Phase 1 | 2015/12/31 |
| 1  | NCT04170426 | Autologous Adipose-derived Stem Cells (AdMSCs) for Rheumatoid Arthritis | Not yet recruiting IV Auto AdMSCs | 18 Years to 75 Years | Phase 1 | 2019/11/20 |
| 1  | NCT03067870 | Transplantation of Autologous Bone Marrow Derived Stem Cells in Patients With Rheumatoid Arthritis | Active, not recruiting IV Auto BMMSCs | 17 Years to 75 Years | Phase 1 | 2017/3/1 |
| 1  | NCT0333681 | Evaluation of Stem Cell Therapy Effects on the Immune Response in Rheumatoid Arthritis Patients | Completed IV Auto BMMSCs | 35 Years to 60 Years | Phase 1 | 2017/11/7 |
| 1  | NCT02491658 | Safety and Efficacy of UC-MSCs in Patients With Psoriasis Vulgaris | Unknown status IV Allo WJUCMS Cs | 18 Years to 65 Years | Phase 1 | 2015/7/8 |
| 1  | NCT02918123 | Safety of FURESTEM-CD Inj. in Patients With Moderate to Severe Plaque-type Psoriasis | Recruiting SQ Allo UCBMS Cs | 19 Years to 65 Years | Phase 1 | 2016/9/28 |
| 1  | NCT03265613 | Safety and Efficacy of Expanded Allogenic AD-MSCs in Patients With Moderate to Severe Psoriasis | Active, not recruiting IV Allo AdMSCs | 18 Years to 65 Years | Phase 1 | 2017/8/29 |
| 1  | NCT03392311 | Efficacy and Safety of AD-MSCs Plus Calcipotriol Ointment in Patients With Moderate to Severe Psoriasis | Recruiting IV Allo AdMSCs | 18 Years to 65 Years | Phase 1 | 2018/1/5 |
| 1  | NCT03424629 | Safety and Efficacy of UC-MSCs in Patients With Plaque Psoriasis | Unknown status UNS Allo WJUCMS Cs | 18 Years to 60 Years | Phase 1 | 2018/2/7 |
| 1  | NCT03745417 | Efficacy and Safety of Expanded UCMSCs On Patients With Moderate to Severe Psoriasis | Recruiting IV Allo WJUCMS Cs | 18 Years to 65 Years | Phase 1 | 2018/11/19 |
| 1  | NCT03765957 | Clinical Research on Treatment of Psoriasis by Human Umbilical Cord-derived Mesenchymal Stem Cells | Not yet recruiting IV Allo WJUCMS Cs | 18 Years to 65 Years | Early Phase 1 | 2018/12/5 |
| 1  | NCT04275024 | Efficacy and Safety of AD-MSCs Plus Calcipotriol Ointment and PSORI-CM01 Granule in Psoriasis Patients | Recruiting IV UNS AdMSCs | 18 Years to 65 Years | Phase 1 | 2020/2/19 |
| 1  | NCT04785027 | Comparison of PSORI-CM01 Formula vs Gu Ben Hua Yu Formula Combined With AD-MSCs in Psoriasis | Recruiting IV Allo AdMSCs | 18 Years to 65 Years | Phase 1 | 2021/3/5 |
### Acute Aplastic Anemia

**NCT01297972**

**Mesenchymal Stem Cells in the Treatment of Relapsed/Refractory Severe Acquired Aplastic Anemia**

- Completion: IV
- Therapeutic Modality: Allo
- Study Sponsor: BMMSCs
- Age Range: 18 Years to 65 Years
- Phase: Phase II
- Start Date: 2011/2/17
- Title: Cle 2015

### Autoimmune Hepatitis

**NCT01661842**

**Umbilical Cord Mesenchymal Stem Cells for Patients With Autoimmune Hepatitis**

- Status: Unknown
- Therapeutic Modality: IV
- Study Sponsor: WJUCMS
- Age Range: 18 Years to 65 Years
- Phase: Phase II
- Start Date: 2012/8/10
- Title: 100

### Immune Thrombocytopenia

**NCT04014166**

**Study of Human Umbilical Cord-Derived Mesenchymal Stem Cells for Treatment of Refractory Immune Thrombocytopenia**

- Status: Unknown
- Therapeutic Modality: IV
- Study Sponsor: WJUCMS
- Age Range: 18 Years to 60 Years
- Phase: Phase I
- Start Date: 2019/7/10
- Title: 15

### Primary Biliary Cirrhosis

**NCT01440309**

**Efficacy and Safety Study of Allogeneic Mesenchymal Stem Cells for Patients With Refractory Primary Biliary Cirrhosis**

- Status: Unknown
- Therapeutic Modality: IV
- Study Sponsor: BMMSCs
- Age Range: 18 Years to 60 Years
- Phase: Phase II
- Start Date: 2011/9/26
- Title: 20

**NCT01662973**

**Umbilical Cord Mesenchymal Stem Cells for Patients With Primary Biliary Cirrhosis**

- Status: Unknown
- Therapeutic Modality: IV
- Study Sponsor: WJUCMS
- Age Range: 18 Years to 60 Years
- Phase: Phase II
- Start Date: 2012/8/13
- Title: 100

**NCT04522869**

**Umbilical Cord Derived Mesenchymal Stem Cell (UC-MSC) Transplantation for Children Suffering From Biliary Atresia**

- Status: Unavailable
- Therapeutic Modality: Allo
- Study Sponsor: WJUCMS
- Age Range: 5 Months to 2 Years
- Phase: Phase II
- Start Date: 2020/8/21
- Title: 34

### Primary Sclerosing Cholangitis

**NCT02997878**

**A Single-arm, Phase IIa, Safety and Efficacy Trial of Selected MSCs in the Treatment of Patients With PSC & AiH**

- Status: Recruiting
- Therapeutic Modality: IV
- Study Sponsor: WJUCMS
- Age Range: 18 Years to 70 Years
- Phase: Phase II
- Start Date: 2016/12/20
- Title: 56

### Severe Aplastic Anemia

**NCT02218437**

**Treatment Protocol of Child SAA With the Injection of Mesenchymal Stem Cells (Umbilical Cord Derived) „MSC-SAA“**

- Status: No Results Available
- Therapeutic Modality: UNx
- Study Sponsor: WJUCMS
- Age Range: 1 Month to 18 Years
- Phase: Phase IV
- Start Date: 2014/8/18
- Title: 20

### Primary Sjögren’s Syndrome

**NCT00953485**

**Allogeneic Mesenchymal Stem Cells Transplantation for Primary Sjögren’s Syndrome (pSS)**

- Status: Unknown
- Therapeutic Modality: IV
- Study Sponsor: BMMSCs
- Age Range: 15 Years to 70 Years
- Phase: Phase II
- Start Date: 2009/6/20
- Title: Xu 2012

**NCT04615455**

**Mesenchymal Stem Cell Therapy of Dry Eye Disease in Patients With Sjögren’s Syndrome**

- Status: Recruiting
- Therapeutic Modality: Allo
- Study Sponsor: AdMSCs
- Age Range: 18 Years and older
- Phase: Phase 2
- Start Date: 2020/11/4
- Title: 40

### Systemic Sclerosis

**NCT00962923**

**Allogeneic Mesenchymal Stem Cells Transplantation for Systemic Sclerosis (SSc)**

- Status: Unknown
- Therapeutic Modality: IV
- Study Sponsor: WJUCMS
- Age Range: 15 Years to 65 Years
- Phase: Phase II
- Start Date: 2009/8/20
- Title: Zhang 2017
Table S3: Clinical trials for OA using MSC-based products

| Conditions | NCT Number | Title                                                                 | Status         | Deliver     | Auto/Allo? | Source | MSCs      | Age         | Phases   | Enrolment | First Posted | Publications          |
|------------|------------|----------------------------------------------------------------------|----------------|-------------|------------|--------|-----------|-------------|-----------|-----------|--------------|------------------------|
| OA         | NCT02291926| Human Umbilical Cord Mesenchymal Stem Cell Transplantation in Articular Cartilage Defect | Completed      | Intraarticular | Allo       | WJUCMS Cs | 18 years to 75 years | Phase 1 | 20 | 2014/11/17 |                          |
| OA         | NCT02237846| Clinical Study of Umbilical Cord Tissue Mesenchymal Stem Cells (UC-MSC) for Treatment of Osteoarthritis | Withdrawn      | Intraarticular | Allo       | WJUCMS Cs | 18 years to 80 years | Phase 1 | 0 | 2014/9/11 |                          |
| OA         | NCT02580695| A Study to Assess Safety and Efficacy of Umbilical Cord-derived Mesenchymal Stromal Cells in Knee Osteoarthritis | Completed      | Intraarticular | Allo       | WJUCMS Cs | 18 years to 70 years | Phase 1 | 30 | 2015/10/20 | Matas 2019133          |
| OA         | NCT04314661| Comparative Effectiveness of Arthroscopy and Non-Arthroscopy Using Mesenchymal Stem Cell Therapy (MSCs) and Conditioned Medium for Osteoarthritis | Recruiting     | Intraarticular | Allo       | WJUCMS C-CM | 55 years to 70 years | Phase 1 | 15 | 2020/3/19 |                          |
| OA         | NCT03800810| Implantation of Allogenic Mesenchymal Stem Cell From Umbilical Cord Blood for Osteoarthritis Management | Recruiting     | Intraarticular | Allo       | WJUCMS Cs | 30 years to 80 years | Early Phase 1 | 9 | 2019/1/11 |                          |
| OA         | NCT03810521| Dose-escalation of Cellistem-OA in Patients With Knee Osteoarthritis | Recruiting     | Intraarticular | Allo       | WJUCMS Cs | 30 years to 75 years | Phase 1 | 24 | 2019/1/18 |                          |
| OA         | NCT03866330| Wharton's Jelly-derived Mesenchymal Stem Cells in Osteoarthritis | Recruiting     | Intraarticular | Allo       | WJUCMS Cs | 30 years to 75 years | Phase 1 | 100 | 2019/3/7  |                          |
| NCT Number | Title                                                                 | Status                  | Treatment Site | Age Range | Phase | Enrollment Date | Reference |
|------------|------------------------------------------------------------------------|-------------------------|----------------|-----------|-------|-----------------|-----------|
| NCT03383081 | The Safety/Efficacy of Human Umbilical Cord Mesenchymal Stem Cells (19#iSCLife®) Therapy for Patients With Osteoarthritis | Not yet recruiting      | Intraarticular | WJUCMSCs | up to 70 Years | Phase 2       | 2017/12/26 |
| NCT03166865 | Clinical Study of Umbilical Cord Mesenchymal Stem Cells (UC-MSC) for Treatment of Knee Osteoarthritis | Recruiting              | Intraarticular | WJUCMSCs | 30 Years to 70 Years | Phase 2       | 2017/5/25  |
| NCT03357770 | The Maximum Tolerated Dose of Mesenchymal Stem Cells From Umbilical Cord | Not yet recruiting      | Intraarticular | WJUCMSCs | 18 Years to 75 Years | Not Applicable | 2017/11/30 |
| NCT03358654 | Evaluating Safety and Efficacy of Mesenchymal Stem Cells From Umbilical Cord | Not yet recruiting      | Intraarticular | WJUCMSCs | 18 Years to 75 Years | 9 2017/11/30  |
| NCT02118519 | Mesenchymal Stem Cells in Knee Cartilage Injuries                      | Completed               | Intraarticular | AutoBMMSCs | 40 Years to 68 Years | Phase 2       | 2014/4/21  |
| NCT02162693 | Clinical Trial of Autologous Adipose Tissue-Derived Mesenchymal Progenitor Cells (MPCs) Therapy for Knee Osteoarthritis | Completed               | Intraarticular | AutoAdMSCs | 18 Years to 70 Years | Phase 2       | 2014/6/13  |
| NCT02037204 | IMPACT: Safety and Feasibility of a Single-stage Procedure for Focal Cartilage Lesions of the Knee. | Completed               | Intraarticular | AutoAdMSCs | 18 Years to 45 Years | Phase 2       | 2014/1/15  |
| NCT020658344 | Clinical Trial to Evaluate Efficacy and Safety of JOINTSTEM in Patients With Degenerative Arthritis | Completed               | Intraarticular | AutoAdMSCs | 18 Years and older | Phase 2       | 2016/1/18  |
| NCT020544802 | Mesenchymal Stem Cell Treatment for Primary Osteoarthritis Knee        | Unknown status          | Intraarticular | AutoAdMSCs | 50 Years to 70 Years | Phase 1       | 2015/9/9   |
| NCT020351011 | Human Autologous MSCs for the Treatment of Mid to Late Stage Knee OA   | Completed               | UNS            | AutoBMMSCs | 40 Years to 65 Years | Phase 2       | 2015/1/30  |
| NCT020365142 | Treatment of Osteoarthritis by Intra-articular Injection of Bone Marrow Mesenchymal Stem Cells With Platelet Rich Plasma | Unknown status          | Intraarticular | AutoBMMSCs | 40 Years to 80 Years | Phase 2       | 2015/2/18  |
| NCT01739504 | Autologous Adipose-Derived Stromal Cells Delivered Intra-articularly in Patients With Osteoarthritis. | Terminated              | Intraarticular | AutoAdMSCs | 18 Years to 80 Years | Assess the Safety and Effects | 2012/12/3  |
| ID   | Title                                                                 | Status          | Study Design          | Treatment | Patient Information | Phase 1 | Phase 2 | Year 1 | Year 2 |
|------|-----------------------------------------------------------------------|-----------------|-----------------------|-----------|---------------------|---------|---------|--------|--------|
| OA NCT01 809769 | Autologous Adipose Tissue Derived Mesenchymal Stem Cells Therapy for Patients With Knee Osteoarthritis | Completed | Intraarticular injection | Auto AdMSCs | 40 Years to 70 Years | 2013/3/13 | Song 2018 |
| OA NCT01 985633 | Mesenchymal Stem Cells Enhanced With PRP Versus PRP In OA Knee | Unknown status | Intraarticular injection | Auto BMMSCs | 40 Years to 75 Years | 2013/11/15 |
| OA NCT01 504464 | The Effects of Intra-articular Injection of Mesenchymal Stem Cells in Knee Joint Osteoarthritis | Completed | Intraarticular injection | Auto BMMSCs | 18 Years to 65 Years | 2012/1/5 |
| OA NCT01 895413 | Autologous Bone Marrow Mesenchymal Stem Cells Transplantation for Articular Cartilage Defects Repair | Completed | Intraarticular injection | Auto BMMSCs | 25 Years to 65 Years | 2013/7/10 |
| OA NCT01 626677 | Follow-Up Study of CARTISTEM® Versus Microfracture for the Treatment of Knee Articular Cartilage Injury or Defect | Completed | Intraarticular injection | UNS Allo UCBMSCs | 18 Years and older | 2012/6/25 |
| OA NCT02 123368 | Treatment of Knee Osteoarthritis by Intra-articular Injection of Bone Marrow Mesenchymal Stem Cells | Completed | Intraarticular injection | Auto BMMSCs | 50 Years to 80 Years | 2014/4/25 |
| OA NCT01 586312 | Treatment of Knee Osteoarthritis With Allogenic Mesenchymal Stem Cells | Completed | Intraarticular injection | Allo BMMSCs | 18 Years to 75 Years | 2012/4/26 |
| OA NCT01 585857 | ADIPOA - Clinical Study | Completed | Intraarticular injection | Auto AdMSCs | 50 Years to 75 Years | 2012/4/26 |
| OA NCT01 453738 | Allogeneic Mesenchymal Stem Cells in Osteoarthritis | Completed | Intraarticular injection | Allo BMMSCs | 40 Years to 70 Years | 2011/10/18 |
| OA NCT01 448434 | Allogeneic Mesenchymal Stem Cells for Osteoarthritis | Completed | Intraarticular injection | Allo UNS | 20 Years to 70 Years | 2011/10/7 |
| OA NCT01 459640 | Intra-Articular Autologous Bone Marrow Mesenchymal Stem Cells Transplantation to Treat Mild to Moderate Osteoarthritis | Unknown status | Intraarticular injection | Auto BMMSCs | 18 Years to 70 Years | 2011/10/25 |
**OA NCT01 227694**  
Adult Stem Cell Therapy for Repairing Articular Cartilage in Gonarthrosis  
Completed  
Intraarticular injection  
Auto BMMSCs  
18 Years to 65 Years  
Phase 1  
2010/10/25

**OA NCT01 436058**  
Side Effects of Autologous Mesenchymal Stem Cell Transplantation in Ankle Joint Osteoarthritis  
Completed  
Intraarticular injection  
Auto BMMSCs  
18 Years to 65 Years  
Phase 1  
2011/9/19

**OA NCT01 159899**  
Transplantation of Bone Marrow Stem Cells Stimulated by Proteins Scaffold to Heal Defects Articular Cartilage of the Knee  
Unknown status  
Intraarticular injection  
Auto BMMSCs  
18 Years to 65 Years  
Phase 1  
2010/7/12

**OA NCT01 499056**  
Mesenchymal Stem Cell Transplantation in Osteoarthritis of Hip Joint  
Completed  
Intraarticular injection  
Auto BMMSCs  
18 Years to 65 Years  
Phase 1  
2011/12/26

**OA NCT01 183728**  
Treatment of Knee Osteoarthritis With Autologous Mesenchymal Stem Cells  
Completed  
Intraarticular injection  
Auto BMMSCs  
18 Years to 76 Years  
Phase 1  
2010/8/18

**OA NCT01 207661**  
Articular Cartilage Resurfacing With Mesenchymal Stem Cells In Osteoarthritis Of Knee Joint  
Completed  
Intraarticular injection  
Auto BMMSCs  
18 Years to 65 Years  
Phase 1  
2010/9/23

**OA NCT01 041001**  
Study to Compare Efficacy and Safety of Cartistem and Microfracture in Patients With Knee Articular Cartilage Injury  
Completed  
UNSAuto UCBMSCs  
18 Years and older  
Phase 3  
2009/12/30

**OA NCT01 300598**  
Autologous Adipose Tissue Derived Mesenchymal Stem Cells Transplantation in Patient With Degenerative Arthritis  
Completed  
Intraarticular injection  
Auto AdMSCs  
18 Years to 75 Years  
Phase 1  
2011/2/21

**OA NCT00 850187**  
Autologous Transplantation of Mesenchymal Stem Cells (MSCs) and Scaffold in Full-thickness Articular Cartilage  
Completed  
UNSAuto BMMSCs  
45 Years to 60 Years  
Phase 1  
2009/2/24

**OA NCT00 891501**  
The Use of Autologous Bone Marrow Mesenchymal Stem Cells in the Treatment of Articular Cartilage Defects  
Unknown status  
Intraarticular injection  
Auto BMMSCs  
15 Years to 55 Years  
Phase 2  
2009/5/1

**OA NCT02 674399**  
A Phase 2 Study to Evaluate the Efficacy and Safety of JointStem in Treatment of Osteoarthritis  
Completed  
UNSAuto AdMSCs  
22 Years to 60 Years  
Phase 2  
2016/2/4

**OA NCT02 641860**  
Clinical Trial of Allogenic Adipose Tissue-Derived Mesenchymal Progenitor Cells Therapy for Knee Osteoarthritis  
Completed  
Intraarticular injection  
Allo AdMSCs  
18 Years to 70 Years  
Phase 1  
2015/12/30
| NCT Number | Study Title                                                                 | Status                  | Cell Type                                      | Age Range          | Phase | Recruitment Start Date |
|------------|------------------------------------------------------------------------------|-------------------------|-----------------------------------------------|--------------------|-------|------------------------|
| NCT04368806 | A Phase 2b/3a Study to Evaluate the Efficacy and Safety of JointStem in Patients Diagnosed as Knee Osteoarthritis | Not yet recruiting      | Not yet recruiting                            | 18 Years and older | Phase 3 | 2020/4/30              |
| NCT04448106 | Autologous Adipose Tissue-Derived Mesenchymal Stem Cells (AdMSCs) for Osteoarthritis | Not yet recruiting      | Intraarticular injection/IV                   | 18 Years and older | Phase 2 | 2020/6/25              |
| NCT04351932 | Bone Marrow Versus Adipose Autologous Mesenchymal Stem Cells for the Treatment of Knee Osteoarthritis | Not yet recruiting      | Intraarticular injection                      | 18 Years to 70 Years | Phase 3 | 2020/4/17              |
| NCT04339504 | Follow-up Safety and Efficacy Evaluation on Subjects Who Completed Phase 1 Clinical Trial | Recruiting              | Intraarticular injection/IV                   | 19 Years and older | Phase 1 | 2020/4/9               |
| NCT04427930 | Follow-up Study for Participants of JointStem Phase 3 Clinical Trial         | Enrolling by invitation | Intraarticular injection                      | 20 Years and older | Phase 3 | 2020/6/11              |
| NCT04326985 | RCT Mesenchymal Stem Cells Versus Hyaluronic Acid in OA Knee):              | Completed               | Intraarticular injection                      | 18 Years to 65 Years | Early Phase 1 | 2020/3/30          |
| NCT02855073 | Clinical Trial to Compare ReJoinTM to Sodium Hyaluronate Injection for Knee Osteoarthritis Cartilage Defects | Active, not recruiting | Intraarticular injection                      | 18 Years to 70 Years | Phase 2 | 2016/8/4 Qiao2020128 |
| NCT04453111 | Efficacy of Bone-marrow-derived and Placenta-derived Multipotent Mesenchymal Stem / Stromal Cells for Osteoarthritis | Recruiting              | Intraarticular injection/Allo                  | 18 Years to 75 Years | Phase 1 | 2020/7/1               |
| NCT04043819 | Evaluation of Safety and Exploratory Efficacy of an Autologous Adipose-derived Cell Therapy Product for Treatment of Single Knee Osteoarthritis | Active, not recruiting | Intraarticular injection                      | 18 Years to 80 Years | Phase 1 | 2019/8/2               |
| NCT03007576 | Treatment of Knee Osteoarthritis With Autologous Mesenchymal Stromal Cell Product (RegStem) | Completed               | Intraarticular injection                      | 50 Years to 75 Years | Phase 1 | 2017/1/2               |
| NCT02805855 | Autologous Culture Expanded Mesenchymal Stromal Cells for Knee Osteoarthritis | Recruiting              | Intraarticular injection                      | 40 Years to 70 Years | Phase 1 | 2016/6/20              |
| NCT03943576 | Allogeneic Adipose Tissue-Derived Mesenchymal Stem Cells (GXCPC1) for Knee Osteoarthritis | Recruiting              | Intraarticular injection                      | 40 Years to 80 Years | Phase 1 | 2019/5/9               |
| NCT Number | Title                                                                 | Recruit Status | Type                      | Intraarticular injection | Subjects Age | Phase | Start Date |
|------------|------------------------------------------------------------------------|----------------|---------------------------|--------------------------|--------------|-------|------------|
| NCT04240873 | Clinical Study of Intra Articular Injection of Catholic MASTER Cell (Bone Marrow Derived Mesenchymal Stem Cell) in Knee Osteoarthritis | Recruiting     | UNS BMMSCs                | Intraarticular injection | 20 Years to 80 Years | Phase 1 | 2020/1/27  |
| NCT03164083 | The Effects of Stromal Vascular Fraction and Mesenchymal Stem Cells as Intra-articular Injection in Knee Joint Osteoarthritis | Withdrawn      | Auto BMMSCs               | Intraarticular injection | 25 Years to 65 Years | Phase 2 | 2017/5/23  |
| NCT04037345 | Evaluate Safety and Explore Efficacy of SMUP-IA-01 in Patients With Knee Osteoarthritis | Recruiting     | Allo UCBMSCs              | Intraarticular injection | 19 Years and older | Phase 1 | 2019/7/30  |
| NCT03602872 | Safety of Allogeneic Bone Marrow Derived Mesenchymal Stem Cells in Subjects With Osteoarthritis | Withdrawn      | Allo BMMSCs               | Intraarticular injection | 35 Years to 65 Years | Phase 1 | 2018/7/27  |
| NCT03969680 | Mesenchymal Stem Cell Transplantation for Osteoarthritis               | Recruiting     | Auto BMMSCs               | Intraarticular injection | 40 Years to 70 Years | Phase 3 | 2019/6/19  |
| NCT03990805 | A Phase 3 Study to Evaluate the Efficacy and Safety of JointStem in Treatment of Osteoarthritis | Active, not recruiting | Auto AdMSCs              | Intraarticular injection | 20 Years to 100 Years | Phase 3 | 2019/3/11  |
| NCT03869229 | Adipose-derived Mesenchymal Stem Cells in Osteoarthritis              | Recruiting     | Auto AdMSCs               | Intraarticular injection | 30 Years to 75 Years | Phase 1 | 2019/3/11  |
| NCT04130100 | Clinical Study of Pulp Mesenchymal Stem Cells in the Treatment of Primary Mild to Moderate Knee Osteoarthritis | Recruiting     | UNS DPMSCs                | Intraarticular injection | 40 Years to 70 Years | Early Phase 1 | 2019/10/17 |
| NCT03818737 | Multicenter Trial of Stem Cell Therapy for Osteoarthritis (MILES)      | Recruiting     | Allo WJUCMSCs             | Intraarticular injection | 40 Years to 70 Years | Phase 3 | 2019/1/28  |
| NCT03956719 | Treatment of Early Knee Osteoarthritis With Autologous Adipose-derived Mesenchymal Stem Cells | Recruiting     | Auto AdMSCs               | Intraarticular injection | 15 Years to 65 Years | Phase 1 | 2019/5/21  |
| NCT03477942 | Impact of Mesenchymal Stem Cells in Knee Osteoarthritis                | Recruiting     | Auto BMMSCs               | Intraarticular injection | 18 Years to 60 Years | Phase 1 | 2018/3/27  |
| NCT03955497 | Effectiveness of Autologous Adipose-derived Stem Cells in the Treatment of Knee Cartilage Injury | Recruiting     | Auto AdMSCs               | Intraarticular injection | 18 Years to 70 Years | Phase 1 | 2019/5/20  |
| Study ID   | Title                                                                 | Status               | Treatment                                                                 | Ages/Range  | Phase/Duration  |
|------------|-----------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------|-------------|-----------------|
| NCT03589287| Allogeneic Bone Marrow MSC Therapy for Knee Osteoarthritis            | Recruiting           | Intraarticular injection Allo BMMSCs                                      | 40 Years and older | 2018/7/17       |
| NCT03357575| The Comparison of Efficacy and Safety of the Mesenchymal Stem Cells From Adipose and Hyaluronic Acid | Not yet recruiting   | Intraarticular injection UNS AdMSCs                                      | 18 Years to 75 Years | 2017/11/30     |
| NCT03337243| Effect of Implanting Allogenic Cytokines Derived From Human Amniotic Membrane (HAM) and Mesenchymal Stem Cells Derived From Human Umbilical Cord Wharton's Jelly (HUMCWJ) on Pain and Functioning of Knee Osteoarthritis | Completed            | Intraarticular injection Allo WJUCMSCs/Amniotic MSCs                    | 50 Years to 85 Years | 2016/11/8      |
| NCT02963727| Use of Wharton Jelly Derived Mesenchymal Stem Cells for Knee Osteoarthritis | Recruiting           | Intraarticular injection Allo WJUCMSCs                                   | 42 Years to 75 Years | 2016/11/15     |
| NCT02966951| Use of Adipose Tissue Derived Mesenchymal Stem Cells for Knee Osteoarthritis | Recruiting           | Intraarticular injection UNS AdMSCs                                      | 42 Years to 75 Years | 2016/11/17     |
| NCT03028428| Intra-articular Injection of MSCs in Treatment of Knee OA             | Unknown status       | Intraarticular injection Allo PMSCs                                      | 40 Years to 75 Years | 2017/1/23      |
| NCT03000712| Investigator Initiated Trial to Evaluate the Efficacy and Safety of Intra-articular Injection of ADMSC Comared to Negative Control After High Tibial Osteotomy in the Osteoarthritis Patients. | Active, not recruiting | Intraarticular injection Auto AdMSCs                                   | 20 Years to 80 Years | 2016/12/22     |
| NCT02838069| A Study Evaluating the Efficacy of a Single Injection Autologous Adipose Derived Mesenchymal Stromal Cells in Patients With Knee Osteoarthritis | Recruiting           | Intraarticular injection Auto AdMSCs                                   | 45 Years to 75 Years | 2016/7/20      |
| NCT02776943| UCMSC Transplantation in the Treatment of Cartilage Damage            | Unknown status       | Intraarticular injection UN JUCMSCs                                    | 18 Years to 70 Years | 2016/5/18      |
| NCT04223622| Effects of ASC Secretome on Human Osteochondral Explants              | Not yet recruiting   | Intraarticular injection UN JUCMSC-secretom                             | 18 Years and older | 2020/1/10      |
OA NCT04 212728 Treatment of Knee Osteoarthritis With Autologous Adipose-derived Mesenchymal Stem Cells Recruiting Intraarticular injection Auto AdMSCs 40 Years to 70 Years explor e the efficac y and safety 60 2019/12/27

OA NCT04 604288 Individual Patient Expanded Access IND of Autologous HBM asMSCS for the Treatment of Hip Osteoarthritis No longer available Intraarticular injection Auto AdMSCs Child, Adult, Older Adult Not Applicable 2020/10/27

OA NCT04 208646 Allogenic Adipose Tissue-Derived Mesenchymal Progenitor Cells for the Treatment of Knee Osteoarthritis Not yet recruiting Intraarticular injection Allo AdMSCs 40 Years to 75 Years Phase 2 108 2019/12/23

Table S4: Clinical trials for pulmonary inflammation & COVID-19 using MSC-based products

| Conditions | NCT Number | Title | Status | Delivery | Auto/Allo? | Source MSCs | Age | Phases | Enrollment | First Posted | Publications |
|------------|------------|-------|--------|----------|------------|-------------|-----|--------|------------|--------------|--------------|
| ARDS       | NCT01 775774 | Human Mesenchymal Stem Cells For Acute Respiratory Distress Syndrome | Completed | IV | Allo | BMSCs | 18 Years and older | Phase 1 | 9 | 2013/1/25 | Liu 2014\(^{140}\), Wilson 2015\(^{137}\) |
| ARDS       | NCT01 902082 | Adipose-derived Mesenchymal Stem Cells in Acute Respiratory Distress Syndrome | Unknown status | IV | Allo | AdMSCs | 18 Years to 90 Years | Phase 1 | 20 | 2013/7/18 | Zheng 2014\(^{136}\) |
| ARDS       | NCT02 097641 | Human Mesenchymal Stromal Cells For Acute Respiratory Distress Syndrome (START) | Completed | IV | Allo | BMSCs | 18 Years and older | Phase 2 | 60 | 2014/3/27 | Liu 2014\(^{140}\), Matthay 2019\(^{138}\) |
| ARDS       | NCT02 112500 | Mesenchymal Stem Cell in Patients With Acute Severe Respiratory Failure Treatment of Severe Acute Respiratory Distress Syndrome With Allogeneic Bone Marrow-derived Mesenchymal Stromal Cells | Unknown status | IV | Auto | BMSCs | 20 Years to 80 Years | Phase 2 | 10 | 2014/4/14 | |
| ARDS       | NCT02 215811 | Human Umbilical-Cord-Derived Mesenchymal Stem Cell Therapy in Acute Lung Injury Mesenchymal Stem Cells (MSCs) for Treatment of Acute Respiratory Distress Syndrome (ARDS) in Patients With Malignancies | Unknown status | IV | Allo | WJUCMSCs | 35 Years to 70 Years | Phase 1|Phas e 2 | 20 | 2015/5/14 | |
| ARDS       | NCT02 804945 | Human Umbilical Cord Mesenchymal Stem Cells (MSCs) Therapy in ARDS | Completed | IV | Allo | BMSCs | 18 Years and older | Phase 1 | 20 | 2016/6/17 | |
| ARDS       | NCT03 608592 | Human Umbilical Cord Mesenchymal Stem Cells (MSCs) Therapy in ARDS | Recruiting | IV | Allo | WJUCMSCs | 18 Years and older | Phase 1|Phas e 2 | 26 | 2018/8/1 | |
| ARDS       | NCT03 818854 | Mesenchymal Stromal Cells For Acute Respiratory Distress Syndrome | Recruiting | IV | Allo | BMSCs | 18 Years and older | Phase 2 | 120 | 2019/1/28 | |
| ID       | Title                                                                                           | Status         | Treatment     | Allogeneic | Age Range          | Phase | Recruitment Dates |
|----------|-------------------------------------------------------------------------------------------------|----------------|---------------|------------|--------------------|-------|-------------------|
| ARDS     | Efficacy and Safety of Umbilical Cord Mesenchymal Stem Cells for the Treatment of Severe Viral Pneumonia | Not yet recruiting | IV | Allo          | WJUCMSCs      | 18 Years to 75 Years | 1     | 2020/2/25         |
| ARDS     | Clinical Study to Assess the Safety and Preliminary Efficacy of HCR040 in Acute Respiratory Distress Syndrome | Active, not recruiting | IV | Allo          | AdMSCs        | 18 Years and older | 2     | 2020/2/28         |
| ARDS     | Mesenchymal Stem Cells for the Treatment of Acute Respiratory Distress Syndrome (ARDS)         | Not yet recruiting | IV | Allo          | WJUCMSCs      | 20 Years to 85 Years | 1     | 2020/4/15         |
| ARDS     | A Clinical Study of Mesenchymal Progenitor Cell Exosomes Nebulizer for the Treatment of Pulmonary Infection |                    | Aerosol inhalation | Allo        | AdMSC-exosomes   | 18 Years to 75 Years | Phase 2 | 2020/9/10         |
| ARDS     | A Clinical Study of Mesenchymal Stem Cell Exosomes Nebulizer for the Treatment of ARDS          | Not yet recruiting | Aerosol inhalation | Allo        | UNS-MSC-Exosomes | 18 Years to 70 Years | Phase 2 | 2020/10/26        |
| Asthma   | Safety and Feasibility Study of Intranasal Mesenchymal Trophic Factor (MTF) for Treatment of Asthma |                      | Aerosol inhalation | Allo        | WJUCMSCs      | 21 Years to 60 Years | Phase 2 | 2014/7/17         |
| Asthma   | Allogeneic Human Cells (hMSC) Via Intravenous Delivery in Patients With Mild Asthma             | Terminated      | IV | Allo          | BMMSCs       | 18 Years to 65 Years | 1     | 2017/5/2          |
| COPD     | PROCHYMAL® (Human Adult Stem Cells) for the Treatment of Moderate to Severe Chronic Obstructive Pulmonary Disease (COPD) | Completed       | IV | Allo          | BMMSCs       | 40 Years to 80 Years | 2     | 2008/5/23         | Weiss 2013<sup>11</sup> |
| COPD     | Safety and Feasibility Study of Administration of Mesenchymal Stem cells for Treatment of Emphysema | Completed       | IV | Auto          | BMMSCs       | 40 Years to 65 Years | 1     | 2011/3/2          | Stolk 2016<sup>12</sup> |
| COPD     | Safety Study of Endobronchial Transplantation of Autologous Mesenchymal Stem Cells (MSCs) in Emphysema Patients | Unknown status | IT | Auto          | BMMSCs       | 16 Years to 70 Years | 1     | 2012/12/31        |
| COPD     | Clinical Study of the Efficacy and Safety of the Application of Allogeneic Mesenchymal (Stromal) Cells of Bone Marrow, Cultured Under the Hypoxia in the Treatment of Patients With Severe Pulmonary Emphysema | Withdrawn       | IV | Allo          | BMMSCs       | 35 Years to 75 Years | 2     | 2013/5/8          |
| COPD     | Safety Study of Bone-marrow Derived Mesenchymal Stromal Cells Associated With Endobronchial Valves in Emphysema | Completed       | IT | UNS          | BMMSCs       | 18 Years and older | 1     | 2013/6/7          |
| COPD     | Adipose Derived Stem Cells Transplantation for Chronic Obstructive Pulmonary Disease            | Unknown status | IV | Auto          | AdMSCs       | 40 Years to 80 Years | 2     | 2016/1/1          |
| Study ID     | Title                                                                 | Treatment or Therapy                                                                 | Status                                                                 | Phase | Start Date | Lead Investigator |
|-------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------|-------------|-------------------|
| NCT02749448 | Mesenchymal Stem Cells Therapy for Treatment of Airway Remodeling in Mustard Patients | Unstated status Auto AdMSCs 45 Years to 65 Years                                     | Phase 1                                                               | 10    | 2016/4/25   | Marzoun 2020      |
| NCT04018729 | Cell Therapy Associated With Endobronchial Valve                      | Not yet recruiting IV BMMSCs 18 Years and older                                      | Phase 2/Phase 3                                                       | 34    | 2019/7/12   |                   |
| NCT04206007 | Mesenchymal Stem Cells for The Treatment of Chronic Obstructive Pulmonary Disease | Recruiting IV Allo WJUCMSCs 40 Years to 75 Years                                    | Phase 1                                                               | 9     | 2019/12/20  |                   |
| NCT04433104 | Umbilical Cord Mesenchymal Stem Cells Transplantation in the Treatment of Chronic Obstructive Pulmonary Disease | Recruiting IV Allo WJUCMSCs 18 Years and older                                      | Phase 1/Phase 2                                                       | 40    | 2020/6/16   |                   |
| NCT04047810 | Mesenchymal Stem Cells in the Treatment of Subjects With Advance Chronic Obstructive Pulmonary Disease (COPD) Repair of Acute Respiratory Distress Syndrome by Stromal Cell Administration (REALIST) (COVID-19) | Recruiting IV Uns Uns 16 Years to 90 Years                                          | Phase 1/Phase 2                                                       | 75    | 2017/2/3    | Gorman 2020      |
| NCT04042143 | Mesenchymal Stem Cell Treatment for Pneumonia Patients Infected With COVID-19 | Recruiting IV Allo WJUCMSCs 18 Years to 70 Years                                    | Not Applicable                                                        | 20    | 2020/2/5    |                   |
| NCT04252118 | Umbilical Cord(UC)-Derived Mesenchymal Stem Cells(MSCs) Treatment for the 2019-novel Coronavirus(nCOV) Pneumonia | Recruiting IV Uns Uns 18 Years to 80 Years                                          | Phase 2                                                               | 16    | 2020/2/13   |                   |
| NCT04273646 | Study of Human Umbilical Cord Mesenchymal Stem Cells in the Treatment of Severe COVID-19 Treatment With Human Umbilical Cord-derived Mesenchymal Stem Cells for Severe Corona Virus Disease 2019 (COVID-19) | Not yet recruiting IV Allo WJUCMSCs 18 Years to 65 Years | Not Applicable                                                        | 48    | 2020/2/18   |                   |
| NCT04228102 | NestaCell簧 Mesenchymal Stem Cell to Treat Patients With Severe COVID-19 Pneumonia | Completed IV Allo WJUCMSCs 18 Years to 75 Years                                      | Phase 2                                                               | 100   | 2020/2/28   |                   |
| NCT04315987 | Safety and Efficacy of CASStem for Severe COVID-19 Associated With/Without ARDS | Recruiting IV Allo ESC-MSCs 18 Years to 70 Years                                     | Phase 1/Phase 2                                                       | 9     | 2020/4/2    |                   |
| NCT04333161 | Cell Therapy Using Umbilical Cord-derived Mesenchymal Stromal Cells in SARS-CoV-2-related ARDS | Recruiting IV Allo WJUCMSCs 18 Years and older                                      | Phase 1/Phase 2                                                       | 40    | 2020/4/3    |                   |
| NCT04333368 | Safety and Efficacy Study of Allogeneic Human Dental Pulp Mesenchymal Stem Cells to Treat Severe COVID-19 Patients | Recruiting IV Allo DPMSCs 18 Years to 65 Years                                      | Phase 1/Phase 2                                                       | 20    | 2020/4/7    | Ye 2020          |
| Clinical Research of Human Mesenchymal Stem Cells in the Treatment of COVID-19 Pneumonia | Recruiting | IV | Allo | WJUCMSCs | 18 Years to 75 Years | 18 Years to 80 Years | Phase 1/Phase 2 | 30 | 2020/4/9 |
| ASC Therapy for Patients With Severe Respiratory COVID-19 | Withdrawn | UNS | Allo | AdMSCs | 18 Years to 80 Years | Early Phase 1 | 30 | 2020/4/10 |
| Mesenchymal Stromal Cells for the Treatment of SARS-CoV-2 Induced Acute Respiratory Failure (COVID-19 Disease) Bone Marrow-Derived Mesenchymal Stem Cell Treatment for Severe Patients With Coronavirus Disease 2019 (COVID-19) | Not yet recruiting | IV | Allo | BMMSCs | 18 Years and older | Phase 1/Phase 2 | 20 | 2020/4/15 |
| A Randomized, Double-Blind, Placebo-Controlled Clinical Trial to Determine the Safety and Efficacy of Hope Biosciences Allogeneic Mesenchymal Stem Cell Therapy (HB-adMSCs) to Provide Protection Against COVID-19 | Enrolling by invitation | IV | Allo | AdMSCs | Child, Adult, Older Adult | Phase 2 | 100 | 2020/4/16 |
| BAtilLe Against COVID-19 Using Mesenchymal Stromal Cells | Not yet recruiting | IV | Allo | AdMSCs | 18 Years and older | Phase 2 | 100 | 2020/4/16 |
| A Clinical Trial to Determine the Safety and Efficacy of Hope Biosciences Autologous Mesenchymal Stem Cell Therapy (HB-adMSCs) to Provide Protection Against COVID-19 | Enrolling by invitation | IV | Auto | AdMSCs | Child, Adult, Older Adult | Phase 2 | 56 | 2020/4/16 |
| Adipose Mesenchymal Cells for Abatement of SARS-CoV-2 Respiratory Compromise in COVID-19 Disease | Not yet recruiting | IV | Auto | AdMSCs | 18 Years to 90 Years | Phase 1 | 20 | 2020/4/20 |
| Use of UC-MSCs for COVID-19 Patients | Treatment of Severe COVID-19 Pneumonia With Allogeneic Mesenchymal Stromal Cells (COVID_MSV) | Recruiting | IV | Allo | WJUCMSCs | 18 Years and older | Phase 2 | 24 | 2020/4/24 |
| Efficacy and Safety Study of Allogeneic HB-adMSCs for the Treatment of COVID-19 | Active, not recruiting | IV | Allo | AdMSCs | Child, Adult, Older Adult | Phase 2 | 100 | 2020/4/24 |
| Mesenchymal Stem Cell Therapy for SARS-CoV-2-related Acute Respiratory Distress Syndrome Clinical Trial of Allogeneic Mesenchymal Cells From Umbilical Cord Tissue in Patients With COVID-19 | Recruiting | IV | UNS | UMS-MSC-Evs | 18 Years to 65 Years | Phase 2/Phase 3 | 60 | 2020/4/28 |
|  | Recruiting | IV | Allo | WJUCMSCs | 40 Years to 80 Years | Phase 2 | 106 | 2020/4/28 |
| Study ID | NCT Number | Title                                                                 | Recruitment Status | Study Type | Age Range | Study Duration | Enrollment Date |
|----------|------------|----------------------------------------------------------------------|--------------------|------------|------------|----------------|-----------------|
| COVID-NCT04 19 366323 | Clinical Trial to Assess the Safety and Efficacy of Intravenous Administration of Allogeneic Adult Mesenchymal Stem Cells of Expanded Adipose Tissue in Patients With Severe Pneumonia Due to COVID-19 | Recruiting IV | Allo AdMSCs | 18 Years to 80 Years | Phase 1/Phase 2 | 26 2020/4/28 |
| COVID-NCT04 19 366830 | Intermediate-size Expanded Access Program (EAP), Mesenchymal Stromal Cells (MSC) for Acute Respiratory Distress Syndrome (ARDS) Due to COVID-19 Infection | No longer available IV | Allo BMSCs | 18 Years and older | Phase 1/Phase 2 | 2020/4/29 |
| COVID-NCT04 19 367077 | MultiStem Administration for COVID-19 Induced ARDS (MACoVIA) | Recruiting IV | Allo BMSCs | 18 Years to 89 Years | Phase 1/Phase 2 | 400 2020/4/29 |
| COVID-NCT04 19 371393 | MSCs in COVID-19 ARDS | Recruiting IV | Allo BMSCs | 18 Years and older | Phase 3 | 300 2020/5/1 |
| COVID-NCT04 19 371601 | Safety and Effectiveness of Mesenchymal Stem Cells in the Treatment of Pneumonia of Coronavirus Disease 2019 | Active, not recruiting IV | Allo WJUCMSCs | 18 Years and older | Early Phase 1 | 60 2020/5/1 |
| COVID-NCT04 19 377334 | Mesenchymal Stem Cells (MSCs) in Inflammation-Resolution Programs of Coronavirus Disease 2019 (COVID-19) Induced Acute Respiratory Distress Syndrome (ARDS) | Not yet recruiting IV | Allo BMSCs | 18 Years and older | Phase 2 | 40 2020/5/6 |
| COVID-NCT04 19 382547 | Treatment of Covid-19 Associated Pneumonia With Allogenic Pooled Olfactory Mucosa-derived Mesenchymal Stem Cells | Enrolling by invitation IV | Allo OMMSCs | 18 Years to 70 Years | Phase 1/Phase 2 | 40 2020/5/11 |
| COVID-NCT04 19 389450 | Double-Blind, Multicenter, Study to Evaluate the Efficacy of PLX PAD for the Treatment of COVID-19 | Recruiting IM | Allo PMSCs | 40 Years to 80 Years | Phase 2 | 140 2020/5/15 |
| COVID-NCT04 19 390139 | Efficacy and Safety Evaluation of Mesenchymal Stem Cells for the Treatment of Patients With Respiratory Distress Due to COVID-19 | Recruiting IV | Allo WJUCMSCs | 18 Years to 75 Years | Phase 1/Phase 2 | 30 2020/5/15 |
| COVID-NCT04 19 390152 | Safety and Efficacy of Intravenous Wharton's Jelly Derived Mesenchymal Stem Cells in Acute Respiratory Distress Syndrome Due to COVID-19 | Not yet recruiting IV | Allo WJUCMSCs | 18 Years to 80 Years | Phase 1/Phase 2 | 40 2020/5/15 |
| COVID-NCT04 19 392778 | Clinical Use of Stem Cells for the Treatment of Covid-19 | Recruiting IV | Allo UNS | 40 Years to 60 Years | Phase 1/Phase 2 | 40 2020/5/19 |
| Study                                                                 | Recruitment Status | Cell Type          | Age | Phase | Recruitment Start Date |
|----------------------------------------------------------------------|--------------------|-------------------|-----|-------|------------------------|
| **COVID-19 NCT04397796** Study of the Safety of Therapeutic Tx With Immunomodulatory MSC in Adults With COVID-19 Infection Requiring Mechanical Ventilation | Recruiting         | Allo BMSCs         | 18 Years to 80 Years | Phase 1 | 2020/5/21              |
| **COVID-19 NCT04398303** ACT-20 in Patients With Severe COVID-19 Pneumonia | Not yet recruiting | Allo WJUCMS Cs/MSC-CM | 18 Years to 85 Years | Phase 1 (Phase 2) | 2020/5/21              |
| **COVID-19 NCT04399889** hCT-MSCs for COVID-19 ARDS                  | Recruiting         | Allo WJUCMS Cs     | 18 Years and older | Phase 1 (Phase 2) | 2020/5/22              |
| **COVID-19 NCT04400032** Cellular Immuno-Therapy for COVID-19 Acute Respiratory Distress Syndrome - Vanguard | Not yet recruiting | Allo BMSCs         | 18 Years and older | Phase 1 | 2020/5/22              |
| **COVID-19 NCT04416139** Mesenchymal Stem Cell for Acute Respiratory Distress Syndrome Due for COVID-19 | Recruiting         | Allo WJUCMS Cs     | 18 Years and older | Phase 2 | 2020/6/4               |
| **COVID-19 NCT04428801** Autologous Adipose-derived Stem Cells (AdMSCs) for COVID-19 | Not yet recruiting | Auto AdMSCs        | 18 Years and older | Phase 2 | 200/6/11               |
| **COVID-19 NCT04429763** Safety and Efficacy of Mesenchymal Stem Cells in the Management of Severe COVID-19 Pneumonia | Not yet recruiting | Allo WJUCMS Cs     | 18 Years to 79 Years | Phase 2 | 2020/6/12              |
| **COVID-19 NCT04444271** Mesenchymal Stem Cell Infusion for COVID-19 Infection | Recruiting         | Allo BMSCs         | 18 Years and older | Phase 2 | 2020/6/23              |
| **COVID-19 NCT04445454** Mesenchymal Stromal Cell Therapy for Severe Covid-19 Infection | Recruiting         | Allo BMSCs         | 18 Years to 70 Years | Phase 2 (Phase 2) | 2020/6/24              |
| **COVID-19 NCT04447833** Mesenchymal Stromal Cell Therapy For The Treatment Of Acute Respiratory Distress Syndrome | Recruiting         | Allo BMSCs         | 18 Years to 65 Years | Phase 1 | 2020/6/25              |
| **COVID-19 NCT04452097** Use of hUC-MSC Product (BX-U001) for the Treatment of COVID-19 With ARDS | Not yet recruiting | Allo WJUCMS Cs     | 18 Years to 80 Years | Phase 1 (Phase 2) | 2020/6/30              |
| **COVID-19 NCT04456361** Use of Mesenchymal Stem Cells in Acute Respiratory Distress Syndrome Caused by COVID-19 Intermediate-size Expanded Access Program (EAP), Mesenchymal Stromal Cells (MSC) for Multisystem Inflammatory Syndrome in Children (MIS-C) Associated With Coronavirus Disease (COVID-19) | Active, not recruiting | Allo WJUCMS Cs | 18 Years and older | Early Phase 1 | 2020/7/2               |
| **COVID-19 NCT04456439** Available IV Allo BMSCs | Available | 2 Months to 17 Years | 2020/7/2 |
| Study ID       | Title                                                                 | Status                  | Treatment | Phase | Recruit Start Date |
|---------------|----------------------------------------------------------------------|-------------------------|-----------|-------|-------------------|
| COVID-NCT04   | Administration of Allogenic UC-MSCs as Adjuvant Therapy for Critically-Ill COVID-19 Patients | Recruiting IV Allo WJUCMSCs | 18 Years to 95 Years | Phase 1 | 2020/7/7 |
| 19 457609     | Treatment of Coronavirus COVID-19 Pneumonia (Pathogen SARS-CoV-2) With Cryopreserved Allogeneic P_MMSCs and UC-MMSCs | Recruiting IV Allo PMSCs | 18 Years to 75 Years | Phase 1| 2020/7/8 |
| COVID-NCT04   | Multiple Dosing of Mesenchymal Stromal Cells in Patients With ARDS (COVID-19) | Recruiting UNS UNS UNS | 18 Years to 80 Years Child, Adult, Older Adult | Phase 2 | 2020/7/10 |
| 19 466098     | Safety and Feasibility of Allogenic MSC in the Treatment of COVID-19 Umbilical Cord Tissue (UC) Derived Mesenchymal Stem Cells (MSCs) Versus Placebo to Treat Acute Pulmonary Inflammation Due to COVID-19 Not yet recruiting IV Allo WJUCMSCs | 18 Years and older | Phase 1 | 2020/7/29 |
| COVID-NCT04   | Investigational Treatments for COVID-19 in Tertiary Care Hospital of Pakistan MSC-based Therapy in COVID-19-associated Acute Respiratory Distress Syndrome Study to Evaluate the Efficacy and Safety of AstroStem-V in Treatment of COVID-19 Pneumonia Therapeutic Study to Evaluate the Safety and Efficacy of DW-MSC in COVID-19 Patients The M EssexNchymal covid-19 Trial: a Pilot Study to Investigate Early Efficacy of MSCs in Adults With COVID-19 | Completed UNS UNS BMSCs | 18 Years to 90 Years Not Applicable | Phase 1 | 2020/7/30 |
| 19 492501     | A Pilot Clinical Study on Inhalation of Mesenchymal Stem Cells Exosomes Treating Severe Novel Coronavirus Pneumonia Therapy for Pneumonia Patients Infected by 2019 Novel Coronavirus Novel Coronavirus Induced Severe Pneumonia Treated by Dental Pulp Mesenchymal Stem Cells Treatment of COVID-19 Patients Using Wharton's Jelly-Mesenchymal Stem Cells | Recruiting Aerosol inhalation Allo AdMSC-exosomes | 18 Years to 75 Years | Phase 1 | 2020/2/19 |
| COVID-NCT04   | Therapies for COVID-19 Studies in Pakistan and India | Recruiting IV Allo WJUCMSCs | 18 Years to 75 Years | Phase 1| 2020/3/3 |
| 19 276987     | Treatment of COVID-19 Patients Using Wharton's Jelly-Mesenchymal Stem Cells | Recruiting IV Allo WJUCMSCs | 18 Years and older | Phase 1 | 2020/3/18 |
| NCT ID       | Title                                                                 | Recruitment | Type | Ages                | Phase | Recruitment Date |
|-------------|----------------------------------------------------------------------|-------------|------|---------------------|-------|------------------|
| COVID-NCT0419437823 | Efficacy of Intravenous Infusions of Stem Cells in the Treatment of COVID-19 Patients | Recruiting | IV Allo  | WJUCMSCs 18 Years to 70 Years | Phase 2 | 2020/6/18        |
| COVID-NCT0419629105 | Regenerative Medicine for COVID-19 and Flu-Elicited ARDS Using Longeveron Mesenchymal Stem Cells (LMSCs) (RECOVER) | Recruiting | IV Allo BMMSCs 18 Years and older | Phase 1 | 2020/11/16       |
| COVID-NCT0419625738 | Efficacy of Infusions of MSC From Wharton Jelly in the SARS-Cov-2 (COVID-19) Related Acute Respiratory Distress Syndrome | Not yet recruiting | IV Allo  | WJUCMSCs 18 Years and older | Phase 2 | 2020/11/12       |
| COVID-NCT0419611256 | Mesenchymal Stem Cells in Patients Diagnosed With COVID-19           | Recruiting | IV UNS AdMSCs 18 Years and older | Phase 1 | 2020/11/2        |
| COVID-NCT0419573270 | Mesenchymal Stem Cells for the Treatment of COVID-19                 | Completed  | IV Allo  | WJUCMSCs 18 Years and older | Phase 1 | 2020/10/5        |
| COVID-NCT0419565665 | Cord Blood-Derived Mesenchymal Stem Cells for the Treatment of COVID-19 Related Acute Respiratory Distress Syndrome | Recruiting | IV Allo  | UCBMSCs 18 Years and older | Phase 1 | 2020/9/25        |
| COVID-NCT0419615429 | Clinical Trial to Assess the Efficacy of MSC in Patients With ARDS Due to COVID-19 | Recruiting | IV Allo BMMSCs 18 Years and older | Phase 2 | 2020/11/4        |
| COVID-NCT0419753476 | Expanded Access Protocol on Bone Marrow Mesenchymal Stem Cell Derived Extracellular Vesicle Infusion Treatment for Patients With COVID-19 Associated ARDS | Available  | IV UNS BMMSCs 18 Years and older | Not Applicable | 2020/12/8        |
| COVID-NCT0419657458 | Study of Intravenous Administration of Allogeneic Adipose-Derived Mesenchymal Stem Cells for COVID-19-Induced Acute Respiratory Distress | Not yet recruiting | IV Allo  | AdMSCs 18 Years and older ?? (Adult, Older Adult) | Phase 2 | 2021/1/28        |
| COVID-NCT0419728698 | Mesenchymal Stem Cells Therapy in Patients With COVID-19 Pneumonia    | Completed  | IV UNS AdMSCs 18 Years to 90 Years | Not Applicable | 2021/1/19        |
| COVID-NCT0419713878 | A Phase II Study in Patients With Moderate to Severe ARDS Due to COVID-19 | Recruiting | IV Allo  | UNS 18 Years and older | Phase 2 | 2021/3/3         |
| COVID-NCT0419780685 | Intermediate Size Expanded Access Protocol Evaluating HB-adMSCs for the Treatment of Post-COVID-19 Syndrome | No longer available | IV Auto  | AdMSCs 18 Years to 65 Years | Phase 2 | 2021/3/15        |
| ID            | Title                                                                 | Status      | Type       | Ages                  | Phase   | Recruitment Date |
|--------------|----------------------------------------------------------------------|-------------|------------|-----------------------|---------|------------------|
| COVID-NCT04  | The Use of Exosomes for the Treatment of Acute Respiratory Distress Syndrome or Novel Coronavirus Pneumonia Caused by COVID-19 | Not yet recruiting | IV UNS-MSC-Exo | 18 Years and older    | Phase 1 | 2021/3/15        |
| 19 798716    |                                                                      |             |            |                       |         |                  |
| IPF NCT01    | A Study to Evaluate the Potential Role of Mesenchymal Stem Cells in the Treatment of Idiopathic Pulmonary Fibrosis | Completed  | IV Allo PMSCs | 40 Years to 80 Years  | Phase 1 | 2011/6/30        |
| 385644       |                                                                      |             |            |                       |         |                  |
| IPF NCT01    | Study of Autologous Mesenchymal Stem Cells to Treat Idiopathic Pulmonary Fibrosis | Completed  | IT Auto BMSCs | Years to 80 Years     | Phase 1 | 2013/8/9         |
| 919827       |                                                                      |             |            |                       |         |                  |
| IPF NCT02    | Allogeneic Human Cells (hMSC) in Patients With Idiopathic Pulmonary Fibrosis Via Intravenous Delivery (AETHER) | Completed  | IV Allo BMSCs | Years to 90 Years     | Phase 1 | 2013/12/17       |
| 013700       |                                                                      |             |            |                       |         |                  |
| IPF NCT02    | Evaluate Safety and Efficacy of Intravenous Autologous ADMSCs for Treatment of Idiopathic Pulmonary Fibrosis | Unknown status | IV Auto AdMSCs | 30 Years to 70 Years | Phase 1 | 2014/5/9         |
| 594839       |                                                                      |             |            |                       |         |                  |
| IPF NCT02    | Safety and Efficacy of Allogeneic Mesenchymal Stem Cells in Patients With Rapidly Progressive Interstitial Lung Disease | Completed  | IV Allo BMSCs | Years to 80 Years     | Phase 1 | 2015/11/3        |
| 135380       |                                                                      |             |            |                       |         |                  |
| Allograft     | Trial of Bone-marrow Derived Mesenchymal Stromal Cells (MSC) for New Onset Chronic Lung Allograft Dysfunction | Recruiting | IV Allo BMSCs | 18 Years and older    | Phase 2 | 2016/3/16        |
| dysfunction   |                                                                      |             |            |                       |         |                  |
| 709343       |                                                                      |             |            |                       |         |                  |
| Bronchiectasis IPF NCT02 | Safety and Tolerability Study of Allogeneic Mesenchymal Stem Cell Infusion in Adults With Cystic Fibrosis | Completed  | IV Allo BMSCs | Years to 87 Years     | Phase 1 | 2015/12/9        |
| 625246       |                                                                      |             |            |                       |         |                  |
| Cystic        | Human Mesenchymal Stem Cells Infusion in Patients With Cystic Fibrosis | Withdrawing | IV Allo UNS  | Years to 45 Years     | Phase 1 | 2017/2/20        |
| Fibrosis NCT03 |                                                                      |             |            |                       |         |                  |
| 058068       |                                                                      |             |            |                       |         |                  |
| Idiopathic    | Efficacy of Bone Marrow Mesenchymal Stem Cell in Pulmonary Hemosiderosis | Not yet recruiting | IV UNS BMSCs | 1 Month to 18 Years   | Early Phase 1 | 2016/12/7 |
| Pulmonary     |                                                                      |             |            |                       |         |                  |
| Hemosiderosis NCT02 |                                                                      |             |            |                       |         |                  |
| 985346       |                                                                      |             |            |                       |         |                  |
| Interstitial Lung Disease NCT03 | Allogeneic Bone Marrow Mesenchymal Stem Cells for Patients With Interstitial Lung Disease (ILD) & Connective Tissue Disorders (CTD) | Recruiting | IV Allo BMSCs | Years to 80 Years     | Phase 1 | 2019/4/26        |
| 929120       |                                                                      |             |            |                       |         |                  |
| Interstitial Lung Disease NCT03 | Role of Stem Cell Therapy in Interstitial Pulmonary Fibrosis | Unknown status | IV Auto BMSCs | Years to 65 Years     | Phase 1 | 2017/6/15        |
| 187431       |                                                                      |             |            |                       |         |                  |
Table S5: Clinical trials for liver cirrhosis using MSC-based products

| Conditions | NCT Number | Title |
|------------|------------|-------|
| Cirrhosis  | NCT00476060 | Mesenchymal Stem Cell Transplantation in Decompensated Cirrhosis |
| Cirrhosis  | NCT00976287 | Autologous Bone Marrow Mesenchymal Stem Cells Transplantation Via Hepatic Artery in Patients With Liver Cirrhosis |
| Cirrhosis  | NCT00993941 | Bone Mesenchymal Stem Cell (BMSC) Transplantation in Liver Cirrhosis Via Portal Vein |
| Cirrhosis  | NCT01220492 | Umbilical Cord Mesenchymal Stem Cells for Patients With Liver Cirrhosis |

| Status | Delivery | Auto/ Allo? | Source MSCs | Age | Phases | Enrolme nt | First Posted | Publications |
|--------|----------|------------|-------------|-----|--------|-----------|-------------|-------------|
| Unkown status | IV | Auto | BMSCS | 18 Years to 65 Years | Phase 2 | 36 | 2007/5/21 |
| Unkown status | IV | Hepatic artery | BMSCS | 18 Years to 70 Years | Phase 2 | 50 | 2009/9/14 |
| Unkown status | IV | Auto | BMSCS | 18 Years to 65 Years | Phase 2 | 60 | 2009/10/14 |
| Completed | IV | Allo | WJUCMS Cs | 18 Years to 70 Years | Phase 2 | 266 | 2010/10/14 |
| Study ID  | Title                                                                 | Status               | Target Age | Stem Cells Source | Stem Cells Type | Duration | Enrollment | End Date       |
|----------|-----------------------------------------------------------------------|----------------------|------------|-------------------|-----------------|----------|------------|----------------|
| NCT012364 | Allogenic Bone Marrow Stem Cells Transplantation in Patients With Liver Cirrhosis | Unknown status       | 16 Years to 65 Years | Portal vein/Hepatic artery | BMSCs | Phase 2 | 60 2010/10/19 |
| NCT01224327 | Umbilical Cord Mesenchymal Stem Cells Infusion Via Hepatic Artery in Cirrhosis Patients | Unknown status       | 18 Years to 70 Years | Hepatic artery | AlloWJUCMS Cs | Phase 1/Phase 2 | 50 2010/10/20 |
| NCT0123102 | Mesenchymal Stem Cells Treat Liver Cirrhosis                           | Suspended            | 18 Years to 70 Years | IV/Hepatic artery | AlloWJUCMS Cs | Phase 1/Phase 2 | 200 2010/11/3 |
| NCT01342250 | Human Umbilical Cord Mesenchymal Stem Cells Transplantation for Patients With Decompensated Liver Cirrhosis | Completed UNS Allo   | 18 Years to 70 Years | Portal vein | AutoWJUCMS Cs | Phase 1 | 20 2011/4/27  |
| NCT01454336 | Transplantation of Autologous Mesenchymal Stem Cell in Decompensate Cirrhotic Patients With Pioglitazone | Completed Portal vein | 18 Years to 65 Years | AutoBMSCs | 20 2011/10/19 |
| NCT01483248 | Human Menstrual Blood-derived Mesenchymal Stem Cells for Patients With Liver Cirrhosis | Unknown status       | 20 Years to 50 Years | IV Auto | MBMSCs | Phase 1/Phase 2 | 50 2011/12/1 |
| NCT01499459 | Autologous Mesenchymal Stem Cell Transplantation in Liver Cirrhosis    | Unknown status       | 18 Years to 80 Years | IV Auto | BMSCs | Phase 2 | 25 2011/12/26 |
| NCT01573923 | Safety and Efficacy Study of Umbilical Mesenchymal Stem Cells for Liver Cirrhosis | Unknown status       | 30 Years to 60 Years | IV Allo | WJUCMS Cs | Phase 1/Phase 2 | 320 2012/4/10  |
| NCT01591200 | Dose Finding Study to Assess Safety and Efficacy of Stem Cells in Liver Cirrhosis | Completed Hepatic artery | 18 Years to 65 Years | Portal vein | AlloBMSCs | Phase 2 | 40 2012/5/3   |
| NCT0174090 | The Effectiveness and Safety for Mesenchymal Stem Cell for Alcoholic Liver Cirrhosis | Unknown status       | 20 Years to 60 Years | UNS Auto | BMSCs | Phase 2 | 12 2012/12/4  |
| NCT01854125 | Autologous Mesenchymal Stem Cell Transplantation in Cirrhosis Patients With Refractory Ascites | Unknown status       | 18 Years to 65 Years | Hepatic artery | AutoBMSCs | Phase 3 | 30 2013/5/15   |
| NCT02327832 | Safety Study of Liver Regeneration Therapy Using Cultured Autologous BMSCs | Unknown status       | 20 Years to 75 Years | IV Auto | BMSCs | Phase 1 | 10 2014/12/30  |
| NCT02652351 | Human Umbilical Cord-Mesenchymal Stem Cells for Hepatic Cirrhosis       | Unknown status       | 18 Years to 80 Years | UNS Allo | WJUCMS Cs | Phase 1 | 20 2016/1/11   |
| NCT02943889 | Stem Cell Transplantation in Cirrhotic Patients                         | Unknown status       | Unspecified Age | Portal vein | AutoBMSCs | Phase 1/Phase 2 | 40 2016/10/25  |
| Disease          | Study Name                                                                 | Status               | Years to Years | Years | Phase  | Start Date   |
|------------------|------------------------------------------------------------------------------|----------------------|---------------|-------|--------|--------------|
| Cirrhosis        | Safety and Efficacy of Co-transfering of Mesenchymal Stem Cell and Regulatory T Cells in Treating End-stage Liver Disease | Not yet recruiting | UNS           | UNS   | Phase 2 | 30 2018/3/9  |
| Cirrhosis        | Clinical Trial of Umbilical Cord Mesenchymal Stem Cell Transfusion in Decompensated Liver Cirrhosis | Unknown IV Allo WJUCMSCs | 18            | 21    | Phase 2 | 252 2018/5/18 |
| Cirrhosis        | Mesenchymal Stem Cell Therapy for Liver Cirrhosis                            | Recruiting IV Auto BMMSCs | Phase 1| Phase 2 | 20 2018/8/10 |
| Cirrhosis        | Mesenchymal Stem Cells Treatment for Decompensated Liver Cirrhosis          | Recruiting IV Allo WJUCMSCs | Phase 1| Phase 2 | 200 2019/5/10 |
| Cirrhosis        | Combination of Autologous MSC and HSC Infusion in Patients With Decompensated Cirrhosis | Recruiting UNS Auto UNS | 20            | 20    | Phase 4 | 5 2020/1/28   |
| Cirrhosis        | Study to Evaluate Hepatic Artery Injection of Autologous Human Bone Marrow-Derived MSCs in Patients With Decompensated Cirrhosis | Recruiting Haptic artery Auto BMMSCs | Phase 1| Phase 2 | 10 2019/2/12   |
| Cirrhosis        | A Clinical Study to Evaluate the Safety and Efficacy of Mesenchymal Stem Cells in Liver Cirrhosis | Unknown IV/He patic artery Auto/Allo BMMSCs/WJUCMSCs | 25 | 25 | Phase 1| 20 2013/6/14  |
| Liver failure    | Safety and Efficacy of Human Mesenchymal Stem Cells for Treatment of Liver Failure | Unknown IV Allo WJUCMSCs | 18 | 20 | Phase 1| 70 2010/10/11  |
| Liver failure    | Safety Study of Stemchymal® in Acute Liver Failure                          | Not yet recruiting IV Allo AdMSCs | Phase 1| Phase 2 | 20 2018/8/14 |
| Liver failure    | Mesenchymal Stem Cell Transplantation for Acute-on-chronic Liver Failure    | Recruiting IV UNS UNS | 18 | 20 | Not Applicable | 200 2018/9/12 |
| Liver failure    | Allogeneic ABCB5-positive Stem Cells for Treatment of Acute-on-Chronic Liver Failure | Recruiting IV Allo SkinMSCs | Phase 1| Phase 2 | 18 | 2019/3/1 |
| Liver failure    | Safety and Efficacy of Mesenchymal Stem Cell Transplantation for Acute-on-Chronic Liver Failure | Not yet recruiting IV UNS | Phase 1| Phase 2 | 45 | 2019/3/5 |
| Liver failure    | Safety and Efficacy of Human Umbilical Cord Derived Mesenchymal Stem Cells for Treatment of HBV-related Liver Cirrhosis | Unkn wn Haptic artery Allo WJUCMSCs | Phase 1| Phase 2 | 240 | 2012/11/20 |
| Hepatitis/Cirrho   | Mesenchymal Stem Cell Therapy for Liver Cirrhosis                            | Recruiting IV Auto BMMSCs | Phase 1| Phase 2 | 200 | 2018/8/10 |
| Hepatitis/Cirrho   | Mesenchymal Stem Cells Treatment for Decompensated Liver Cirrhosis          | Recruiting IV Allo WJUCMSCs | Phase 1| Phase 2 | 200 | 2019/5/10 |
| Hepatitis/Cirrho   | Combination of Autologous MSC and HSC Infusion in Patients With Decompensated Cirrhosis | Recruiting UNS Auto UNS | 20            | 20    | Phase 4 | 5 2020/1/28   |
| Hepatitis/Cirrho   | Study to Evaluate Hepatic Artery Injection of Autologous Human Bone Marrow-Derived MSCs in Patients With Decompensated Cirrhosis | Recruiting Haptic artery Auto BMMSCs | Phase 1| Phase 2 | 10 2019/2/12   |
| Hepatitis/Cirrho   | A Clinical Study to Evaluate the Safety and Efficacy of Mesenchymal Stem Cells in Liver Cirrhosis | Unknown IV/He patic artery Auto/Allo BMMSCs/WJUCMSCs | 25 | 25 | Phase 1| 20 2013/6/14  |
| Hepatitis/Cirrho   | Safety and Efficacy of Human Mesenchymal Stem Cells for Treatment of Liver Failure | Unknown IV Allo WJUCMSCs | 18 | 20 | Phase 1| 70 2010/10/11  |
| Hepatitis/Cirrho   | Safety Study of Stemchymal® in Acute Liver Failure                          | Not yet recruiting IV Allo AdMSCs | Phase 1| Phase 2 | 20 2018/8/14 |
| Hepatitis/Cirrho   | Mesenchymal Stem Cell Transplantation for Acute-on-chronic Liver Failure    | Recruiting IV UNS UNS | 18 | 20 | Not Applicable | 200 2018/9/12 |
| Hepatitis/Cirrho   | Allogeneic ABCB5-positive Stem Cells for Treatment of Acute-on-Chronic Liver Failure | Recruiting IV Allo SkinMSCs | Phase 1| Phase 2 | 18 | 2019/3/1 |
| Hepatitis/Cirrho   | Safety and Efficacy of Mesenchymal Stem Cell Transplantation for Acute-on-Chronic Liver Failure | Not yet recruiting IV UNS | Phase 1| Phase 2 | 45 | 2019/3/5 |
| Hepatitis/Cirrho   | Safety and Efficacy of Human Umbilical Cord Derived Mesenchymal Stem Cells for Treatment of HBV-related Liver Cirrhosis | Unkn wn Haptic artery Allo WJUCMSCs | Phase 1| Phase 2 | 240 | 2012/11/20 |
**Clinical Study of Human Umbilical Cord Mesenchymal Stem Cells (19#iSCLife®-LC) in the Treatment of Decompensated Hepatitis B Cirrhosis**

NCT03826433  
Recruiting  
IV  
Allo  
WJUCMS Cs  
18 Years to 60 Years  
Phase 1  
20  
2019/2/1

**Umbilical Cord Mesenchymal Stem Cell for Liver Cirrhosis Patient Caused by Hepatitis B**

NCT04357600  
Recruiting  
IV  
Allo  
WJUCMS Cs  
18 Years to 65 Years  
Phase 1|Phase 2  
12  
2020/4/22

**Mesenchymal Stem Cells Transplantation for Liver Cirrhosis Due to HCV Hepatitis**

NCT02705742  
Unknown status  
IV  
Auto  
AdMSCs  
18 Years to 70 Years  
Phase 1  
5  
2016/3/10

**Therapeutic Effects of Liver Failure Patients Caused by Chronic Hepatitis B After Autologous MSCs Transplantation**

NCT00956891  
Completed  
UNS  
Auto  
BMSCs  
15 Years to 70 Years  
Not Applicable  
158  
2009/8/11

**Allogenic Bone Marrow Stem Cell Transplantation in Liver Failure**

NCT01221454  
Unknown status  
IV  
Allo  
BMSCS  
16 Years to 65 Years  
Phase 2  
60  
2010/10/15

**Allogeneic Bone Marrow Mesenchymal Stem Cells Transplantation in Patients With Liver Failure Caused by Hepatitis B Virus (HBV)**

NCT01322906  
Unknown status  
IV  
Allo  
BMSCS  
16 Years to 65 Years  
Phase 2  
120  
2011/3/25

**Umbilical Cord Mesenchymal Stem Cells Transplantation Combined With Plasma Exchange for Patients With Liver Failure**

NCT01724398  
Unknown status  
IV  
Allo  
WJUCMSCsCs  
16 Years to 65 Years  
Phase 1|Phase 2  
120  
2012/11/9  
Xu  
2019

**UC-MSC Infusion for HBV-Related Acute-on-Chronic Liver Failure**

NCT02812121  
Unknown status  
IV  
Allo  
UCBMS Cs  
18 Years to 65 Years  
Phase 2  
261  
2016/6/24

**Safety and Efficacy of Diverse Mesenchymal Stem Cells Transplantation for Liver Failure**

NCT01844063  
Unknown status  
IV  
Allo  
BMSCs/WJUCMSCsCs  
18 Years to 65 Years  
Phase 1|Phase 2  
210  
2013/5/1

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**Table S6: Clinical trials for non-immune diseases using MSC-derived products**

| Condition | NCT Number | Title | Status | Delivery | Auto/Allo? | Source MSCs | Age | Phase | Enrollment | First Posted |
|-----------|------------|-------|--------|----------|------------|-------------|-----|-------|------------|--------------|
| Hypoxic-Ischemic Encephalopathy | NCT02854579 | Neuronal Progenitor Cell and Paracrine Factors to Treat Hypoxic Ischemic Encephalopathy | Unknown status | Intrathecal | UNS | UNS-MSC-CM | up to 14 Days | Not Applicable | 120 | 2016/8/3 |
| Diabetic foot ulcers | NCT02943486 | Mesenchymal Stromal Cell Derivatives in the Treatment of Chronic Diabetic Foot Ulcers Type 1 and 2 | Unknown status | Intradermic | UNS | UNS-MSCs/MSC-CM | 40 Years to 80 Years | Phase 1|Phase 2 | 51 | 2016/10/24 |
| Acute ischemic stroke | NCT03384433 | Allogeneic Mesenchymal Stem Cell Derived Exosome in Patients With Acute Ischemic Stroke | Completed | IV | Allo | UNS-MSC-Exo | 40 Years to 80 Years | Phase 1|Phase 2 | 5 | 2017/12/27 |
| Condition                          | Clinical Trial ID NCT | Treatment Description                                                                 | Recruitment Status | Target Population                      | Phase | Recruitment Date          | Start Date of Study |
|-----------------------------------|-----------------------|----------------------------------------------------------------------------------------|--------------------|----------------------------------------|-------|---------------------------|---------------------|
| Macular holes                    | NCT03437759           | MSC-Exos Promote Healing of MHs                                                        | Recruiting         | Allo WJUCMS C-Exo up to 80 Years       | Early Phase 1 | 44                        | 2018/2/19           |
| Pancreatic cancer                | NCT03608631           | iExosomes in Treating Participants With Metastatic Pancreas Cancer With KrasG12D Mutation | Not yet recruiting | UNS-MSC-Exo 18 Years and older        | Phase 1 | 28                        | 2018/8/1            |
| Androgenic alopecia             | NCT03676400           | Hair Growth Efficacy and Safety of NGF-574H in Adult With Androgenic Alopecia           | Completed On hair  | WJUCMS C-CM 18 Years to 60 Years       | Phase 1 | Not Applicable            | 2018/9/18           |
| Residual burn wounds            | NCT04235296           | Mesenchymal Stem Cell Conditioned Medium-derived Pleiotropic Factor in Treating Residual Burn Wound | Recruiting On the wound | UNS-MSC-PF 18 Years to 75 Years | Phase 1 | 30                        | 2020/1/21           |
| Chronic wounds                  | NCT04235868           | Mesenchymal Stem Cell-derived Pleiotropic Factor in Treating Non-healing Wounds       | Recruiting On the wound | UNS-MSC-CM 6 Years to 28 Years | Phase 1 | 30                        | 2020/1/22           |
| Cerebral palsy                   | NCT04314687           | Stem Cell and Conditioned Medium for Cerebral Palsy                                    | Recruiting Intrathecal | WJUCMS C-CM 18 Years to 55 Years | Phase 1| 78                        | 2020/3/19           |
| Retinitis pigmentosa            | NCT04315025           | Safety Issues of Peribulbar Injection of UC-MSC in Patients With Retinitis Pigmentosa | Completed Peribulbar | WJUCMS C-CM 18 Years to 65 Years | Phase 1| 18                        | 2020/3/19           |
| Keloid scars                     | NCT04326959           | Implantation of Mesenchymal Stem Cell, Conditioned Medium, or Triamcinolone Acetonide for Keloid Exosome of Mesenchymal Stem Cells for Multiple Organ Dysfunction Syndrome After Surgical Repair of Acute Type A Aortic Dissection | Not yet recruiting | WJUCMS C-CM 20 Years to 80 Years | Phase 1| Not Applicable            | 2020/4/22           |
| Multiple organ failure           | NCT04356300           | Repeated Administration of Nurown (Autologous MSC-NTF Cells) for the Treatment of ALS   | Not yet recruiting | AdMSC-Exo 50 Years and older | Phase 1| 9                         | 2020/5/15           |
| Alzheimer disease                | NCT04388982           | Effects of MSCs Derived Pleiotropic Factors on Wound Healing in Endonasal Surgeries    | Not yet recruiting | UNS-MSC-PF 18 Years to 60 Years | Phase 1| 50                        | 2020/9/2            |
| Nasal trauma                     | NCT04536233           | Mesenchymal Stem Cell-derived Pleiotropic Factor in Treating Poorly Healed Wounds of Postoperative Incision | Not yet recruiting | UNS-MSC-PF 18 Years to 75 Years | Phase 1| 50                        | 2020/9/4            |
| Chronic wounds                  | NCT04538885           | Expanded Access Protocol: Repeated Administration of Nurown (Autologous MSC-NTF Cells) for the Treatment of ALS | Available Intrathecal | BMMSC-NF 18 Years to 63 Years | Not Applicable | 2020/12/23 |