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Current controversies in trichology: a European expert consensus statement

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Abstract

Introduction Hair disorders are one of the most common conditions within dermatology practice but, although new diagnostic tools and therapeutic options have arisen, the management of these patients still represents a major clinical challenge.

Objective This study aimed at gathering information and achieving consensus on relevant recommendations on the latest advances in alopecia, trichoscopy and hair dermocosmetics.

Methods Experts of the steering committee consulted the available evidence on trichology-related areas from the past 5 years and formulated recommendations based on the evidence and their experience. A modified two-round Delphi procedure was performed among 45 European dermatologists experts in trichology to consult their degree of agreement on twenty recommendations, using a 4-point Likert scale. Consensus was defined as >80% of participants scoring either 1 (totally agree) or 2 (agree).

Results In the first round of the Delphi questionnaire, 75% of the recommendations reached consensus. Those that were not agreed upon were reformulated by the steering committee and voted again after an online meeting, where consensus was achieved in all recommendations.

Conclusions All recommendations reached consensus after the two-round Delphi questionnaire and may be useful in clinical practice for dermatologists. The participants agreed that besides this consensus, further clinical studies are needed to assess the benefits of the emerging tools and treatments and to clarify the controversies that still exist in the field, aiming at improving patients' quality of life.

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Conflict of interest

Daniel Bacqueville and Valérie Mengeaud are current employees of Pierre Fabre Laboratories. Dr. Ramon Grimalt, Dr. David Saceda and Dr. Teresa Meyer declare that they have no conflict of interest. Dr. Bianca Maria Piraccini has received consulting fees from Difa Cooper, Pierre Fabre, L'Oreal, ISDIN, Legacy Healthcare, Pfizer, Almirall and Lilly; and has received honoraria for lectures and presentations from Difa cooper. Dr. Lidia Rudnicka has received consulting fees from Pierre Fabre, L'Oreal, Leo and Pfizer has received honoraria for lectures and presentations from Leo, Lilly and Abbvie; has had fiduciary roles in boards, societies or committees involving Polish Dermatological Society, European Academy of Dermatology and Venereology, American Academy of Dermatology and Venereology, International DermoScopy Society and International Trichoscopy Society. Dr. Annika Vogt has been involved in the following sponsored as well as investigator-initiated research projects supported by Follicum AB, LEO Pharma, PPM Services S.A., Novartis Pharma AG, Johnson & Johnson

†Trichology Experts Network Group are listed in Appendix 1

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Introduction
Hair disorders, especially hair loss, are one of the most common conditions within dermatology practice that can significantly affect the patient’s quality of life. In recent years, new diagnostic tools and therapeutic options have been suggested, but whether they are effective and safe to treat hair disorders still remains controversial in some cases, as available evidence is limited.

New advances in trichology have proposed low-dose oral minoxidil, bicalutamide, dustasteride and platelet-rich plasma (PRP) for the treatment of different types of alopecia. Besides drug treatments, hair transplantation (HT) has also emerged as a therapeutic option for many patients with non-scarring alopecia, but its effectiveness in cicatricial alopecia remains uncertain. Also, the role of the skin microbiome in skin disorders has received increasing attention in recent years.

Another controversial area is the effectiveness of vitamins and minerals supplements for the treatment of hair disorders. Among the SC in order to elaborate the items of the questionnaire, the SC conducted a review of the literature in the field from the past 5 years and elaborated two recommendations on each assigned topic based on their judgement and experience, and according to the available evidence.

The recommendations that composed the questionnaire were validated by all the members of the SC and voted on a first round by the panellists (n = 46); the first round was conducted between the 21st of September 2020 and the 7th of January 2021 on an Internet microsite. A Likert scale was used to indicate the level of agreement: totally agree (1) – agree (2) – disagree (3) – totally disagree (4). The level of agreement for the consensus was set at 80%. Unanimity was considered when 100% of the participants scored either 1 (totally agree) or 2 (agree). For the purpose of the analysis, unanimity and consensus were considered together as a consensus. The recommendations that did not reach consensus were reformulated by the same experts; some of them were proposed as statements rather than recommendations. On the 5th and 6th of February 2021, an online meeting was held and all the evidence supporting the recommendations was presented and discussed. After the meeting, the second round was opened and the modified recommendations were voted again (n = 45); the online voting system was active for a month.

Methods
Participants
Two coordinators (S V-G and T M-G) were selected considering their expertise in trichology to supervise the whole process and a steering committee (SC), formed by the two coordinators and seven trichologists (five physicians and two academic researchers), was established. Participants were renowned European experts in trichology. Physicians had at least 7 years of experience in the area of trichology (average 17.5 years), visit at least 60 patients a month and have an average of 100 relevant research publications in the field. Academic researchers had 3 years of experience in trichology research.

Forty-six experts from 10 different countries were invited to participate as panellists in the modified Delphi questionnaire; 45 of them participated in both rounds. Their nationalities included Spain (31), Portugal (3), Bulgaria (2), Poland (2), Russia (2), Belgium (1), India (1), Nigeria (1), Ukraine (1) and Georgia (1). They were selected given their expertise and interest in trichology. The majority (93.5%) had at least 5 years of professional experience and visit at least fifty patients a month, has published trichology-related articles (67.4%), and has participated in congresses (71.7%) and clinical studies (56.5%) with a special focus in trichology.

Procedure and consensus process
A two-step modified Delphi, conducted between September 2020 and March 2021, was used to know the panellists’ degree of agreement on the recommendations formulated by the SC.

Controversy areas to discuss were selected given the novelty of the subject and the paucity of evidence; they were distributed among the SC in order to elaborate the items of the questionnaire. The SC conducted a review of the literature in the field from the past 5 years and elaborated two recommendations on each assigned topic based on their judgement and experience, and according to the available evidence.

The recommendations that composed the questionnaire were validated by all the members of the SC and voted on a first round by the panellists (n = 46); the first round was conducted between the 21st of September 2020 and the 7th of January 2021 on an Internet microsite. A Likert scale was used to indicate the level of agreement: totally agree (1) – agree (2) – disagree (3) – totally disagree (4).

The level of agreement for the consensus was set at 80%. Unanimity was considered when 100% of the participants scored either 1 (totally agree) or 2 (agree). For the purpose of the analysis, unanimity and consensus were considered together as a consensus. The recommendations that did not reach consensus were reformulated by the same experts; some of them were proposed as statements rather than recommendations. On the 5th and 6th of February 2021, an online meeting was held and all the evidence supporting the recommendations was presented and discussed. After the meeting, the second round was opened and the modified recommendations were voted again (n = 45); the online voting system was active for a month.

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Table 1 Results of the first round of the modified Delphi (n = 46). The % of agreement is shown

| Alopecia | Oral minoxidil 5 mg daily is a therapeutic option for male patients with androgenetic alopecia. | 95.65% |
|----------|-----------------------------------------------------------------------------------------------|--------|
|          | Oral bicalutamide must be considered in female pattern hair loss when other approved treatment options have failed | 86.96% |
|          | Mesotherapy with dutasteride is a useful treatment for androgenetic alopecia patients. A protocol should be established | 100.00% |
|          | Systemic therapy is advisable for moderate-to-severe alopecia areata due to its association with systemic activation of the immune system | 97.83% |
|          | Patients with frontal fibrosing alopecia who are worsening despite treatment may benefit from reducing the use of sunscreens. | 65.22% |
|          | Platelet-rich plasma can be used as an adjunctive anti-inflammatory treatment for patients with lichen planopilaris. | 80.43% |
| Trichoscopy | Every patient treated for hair loss should have a trichoscopy examination performed by the physician at least once throughout the treatment process. | 95.65% |
|          | In cases of chronic telogen effluvium associated with trichoscopical inflammatory signs (perifollicular erythema or hyperkeratosis, etc.), a trichoscopy-guided biopsy should be recommended. | 97.83% |
|          | Recently described diffuse variants of lichenoid alopecias should be considered in the differential diagnosis of patients complaining of scalp pruritus. In these patients, a trichoscopy-guided biopsy is recommended. | 97.83% |
| Scalp pruritus | Patients with alopecias associated with scalp dysesthesia could benefit from treatment with naltrexone. | 78.26% |
| Microbiome and the scalp | Balance between bacteria and yeast might lead to a healthy skin. | 93.48% |
|          | Mild forms of scalp psoriasis could also be related to the type and quantity of bacteria living in our skin. | 63.04% |
|          | Hair transplant should be considered in patients with frontal fibrosing alopecia. | 63.04% |
| Hair ageing | Among hair disorders, hair ageing is an entity of its own requiring specific patient education and management. | 89.13% |
|          | Intake or topical application of antioxidants could be a supportive measure for individuals suffering from clinical signs of hair ageing. | 76.09% |
| Hair cosmetics | An innovative generation of in vitro models is needed to closely reproduce native hair follicle by using long-term organ culture and tissue engineering. They will be useful to better understand hair follicle biology and to improve alopecia treatment before clinical trials in patients. | 100.00% |
|          | The identification of active ingredients that specifically target both intra- and extra-follicle signalling pathways (as for example Wnt/B catenin pathway, microcirculation, growth factors, cytokines, hormones, enzymes) could help to improve hair loss treatment. | 100.00% |
|          | Nutritional deficiencies should be corrected by diet supplementation or nutricosmetics to improve Telogen Effluvium. | 97.83% |
|          | Patients with telogen effluvium could benefit from oral iron supplementation in order to reach ferritin levels >40 μL. | 97.83% |
|          | Topical dermo-cosmetic formulations may improve hair loss by using specific active ingredients targeting the hair follicle, but also help to improve the quality of life of patients. | 84.78% |

GREEN: Consensus, GREY: no Consensus.

Results

In the first round, 75% of the recommendations (15/20) reached consensus (15% unanimously; Table 1). Four out of the five recommendations without consensus were modified before the second round in order to improve clarity, and some of them were proposed as statements rather than recommendations. One of the recommendations was not changed, but the supporting evidence was presented during the meeting. After the second round, an agreement was achieved for all of them (Table 2).

Discussion

This study provides the opinion of 45 experts on 20 recommendations and statements about the latest advances in trichology in a two-round modified Delphi. The second round was performed after an online meeting where the SC presented the scientific supporting evidence. Several concerns and controversies were raised and discussed during the meeting, but at the end, a consensus was achieved in all recommendations.

Non-cicatricial alopecia

Oral minoxidil 5 mg daily is a therapeutic option for male patients with androgenetic alopecia. The safety and efficacy of oral minoxidil at low dose for the treatment of androgenetic alopecia have been evaluated in recent studies. Although experts agreed on the recommendation, several concerns were raised during the meeting, like the fact that low doses are not commercially available in most countries and the drug needs to be compounded in the pharmacy. Oral minoxidil is used for the treatment of hypertension, so any alteration in the compounding could lead to cardiovascular complications. Depending on the severity of the alopecia and comorbidities of the patient, lower doses (2.5 mg daily or even less) can be considered.

Oral bicalutamide must be considered in female pattern hair loss when other approved treatment options have failed. Some studies have shown the off-label use of bicalutamide, a...
nonsteroidal antiandrogen, for female androgenetic alopecia with a good safety profile with maximum efficacy at approximately 12 months. Experts agreed on this recommendation, but during the discussion, they mentioned the need to perform a blood test every 3–4 months in order to monitor the liver enzymes, as mild hypertransaminasaemia seems to be the most frequent adverse effect in the published studies. So, oral bicalutamide might be an option in female pattern hair loss when other therapies have failed. Woman with childbearing potential must maintain contraceptive measures during the treatment and at least 2 months after stopping it.

**Mesotherapy with dutasteride is a useful treatment for androgenetic alopecia patients. A protocol should be established** Dutasteride is an antiandrogen that has been used off-label for the treatment of androgenetic alopecia for several years, and 0.5 mg a day has proved to be effective and safe to treat male pattern hair loss. Mesotherapy with dutasteride has also been used in some prospective and placebo-controlled studies to treat patients with androgenetic alopecia.

**Systemic therapy is advisable for moderate-to-severe alopecia areata due to its association with systemic activation of the immune system** Whether alopecia areata is an autoimmune disease still remains controversial but many studies have shown that severe cases are associated with a systemic activation of the immune system. While topic or local therapies may cause hair regrowth, they are unlikely to target the cause of the disease; the use of systemic therapy is recommended for those patients. The specific therapy (i.e. systemic corticosteroids, classical immunosuppressive drugs, JAK inhibitors…) will depend on the patient’s features, benefit–risk ratio and availability of the treatment.

**Cicatricial alopecia**

It is controversial whether patients with frontal fibrosing alopecia who are worsening despite treatment may benefit from reducing the use of sunscreens. A very recent and controversial topic in dermatology is the link between sunscreens and the development of FFA. Despite some studies support this association, data on this topic are still scarce and no agreement was reached on whether sunscreens should be avoided in patients with FFA. However, a survey by the American Hair Research Society shows that most specialists recommend avoiding the use of sunscreens (either chemical or physical) in patients with FFA. Further research is required to provide an evidence-based recommendation.

**Platelet-rich plasma can be used as an adjunctive anti-inflammatory treatment for patients with lichen planopilaris** Platelet-rich plasma (PRP) has recently been described as a useful therapy for some autoimmune dermatoses like lichen sclerosus, as its high levels of growth factors have anti-inflammatory effects. Though evidence is limited and the

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**Table 2. Results of the first (n = 46) and second (n = 45) round of the modified Delphi of the modified recommendations and statements. The % of agreement is shown.**

| Alopecia | 1st round results | Patients with frontal fibrosing alopecia who are worsening despite treatment may benefit from reducing the use of sunscreens. | 65.22% |
|----------|-------------------|---------------------------------------------------------------------------------------------------------------------------------|-------|
|          | 2nd round results | It is controversial whether patients with frontal fibrosing alopecia who are worsening despite treatment may benefit from reducing the use of sunscreens. | 84.44% |
| Scalp pruritus | 1st round results | Patients with alopecias associated with scalp dysesthesia could benefit from treatment with naltrexone. | 78.26% |
|          | 2nd round results | In case of alopecias associated with scalp dysesthesia, Naltrexone represents a promising option in patients unresponsive to conventional treatments. | 93.33% |
| Microbiome and the scalp | 1st round results | Mild forms of scalp psoriasis could also be related to the type and quantity of bacteria living in our skin. | 63.04% |
|          | 2nd round results | Mild forms of scalp psoriasis could also be related to the type and quantity of bacteria living in our skin. | 82.22% |
| Hair transplantation | 1st round results | Hair transplant should be considered in patients with frontal fibrosing alopecia. | 63.04% |
|          | 2nd round results | Hair transplant should be considered in some cases of frontal fibrosing alopecia. | 91.11% |
| Hair ageing | 1st round results | Intake or topical application of antioxidants could be a supportive measure for individuals suffering from clinical signs of hair ageing. | 76.09% |
|          | 2nd round results | Experimental evidence supports the need for clinical studies to assess whether antioxidants could be a supportive measure for individuals suffering from clinical signs of hair ageing. | 88.89% |

GREEN: Consensus, RED: no Consensus.
A number of patients included in recent studies is low, preliminary data show that PRP might be an interesting second-line therapeutic approach for LPP patients.

**Trichoscopy**

*Every patient treated for hair loss should have a trichoscopy examination performed by the physician at least once throughout the treatment process.* Trichoscopy is an effective and non-invasive technique to examine the hair and the scalp. It can be used for a more effective and accurate diagnosis of hair disorders, but it might also assist in the diagnosis of other unperceived illnesses, as hair loss could be a symptom of severe local or systemic diseases. Over the past 10 years, studies about the role of trichoscopy in the diagnosis of different hair disorders have increased considerably, and nowadays, this technique is commonly used by dermatologists in patients with hair loss.

*In cases of chronic telogen effluvium associated with trichoscopy inflammatory signs (yellow dots, perifollicular erythema or hyperkeratosis, etc.), a trichoscopy-guided biopsy should be recommended.* Diagnosis of telogen effluvium is usually based on patient history, physical examination and trichoscopy. However, telogen hair loss might be observed in other types of hair or systemic disorders. Therefore, it was agreed that in patients with signs of chronic hair loss associated with trichoscopy scalp inflammation and perifollicular pigmentation, a scalp trichoscopy-guided biopsy should be performed in order to rule out an associated cicatricial alopecia, such as fibrosing alopecia in a pattern distribution (FAPD) or lichen planopilaris diffuse pattern (LPPDP).

*Recently described diffuse variants of lichenoid alopecias should be considered in the differential diagnosis of patients complaining of scalp pruritus.* In these patients, a trichoscopy-guided biopsy is recommended. Scalp pruritus is a frequent complaint in the dermatological area and might be a sign of different local or systemic diseases. Recently described scalp diseases, including FAPD and LPPDP, might also be associated with scalp itching. These types of alopecia can be easily mistaken for other dermatological issues: trichoscopy-guided biopsies are recommended in these cases as they might help with the diagnoses and management of these types of scarring alopecia.

**Scalp pruritus**

*In case of alopecias associated with scalp dysesthesia, Naltrexone represents a promising option in patients unresponsive to conventional treatments.* In recent years, some studies have suggested that naltroxene at low doses (1-5 mg) could be a potential alternative to the standard therapeutic regimen of scalp pruritus. However, other studies using topical steroids combined with either 3 mg of naltroxene or placebo failed to show any significant difference in the improvement of LPP. Up to 5 mg of naltroxene a day preserves its anti-inflammatory properties; thus, it could be a potential therapeutic option for patients with scalp dysesthesia; a large clinical study (NCT04409041) to test this hypothesis has started.

**Microbiome and scalp: seborrheic dermatitis, alopecia areata and psoriasis**

*Balance between bacteria and yeast might lead to a healthy skin.* The microorganisms living in our skin have been shown to protect against invading pathogens, and its role in some skin disorders has been recently studied by many researchers. In seborrheic dermatitis, some studies show that decreasing specific microorganisms of our skin might be beneficial for the course of the disease, while other papers have found healthy bacteria that might protect against disease development. In alopecia areata, the role of the skin microbiome is still unclear and, even though some bacterial biomarkers are associated with the disease, further studies are necessary to prove their involvement in the pathophysiology of the disease and to test its potential as a diagnostic tool.

*Mild forms of scalp psoriasis could also be related to the type and quantity of bacteria living in our skin.* The role of the skin microbiome in scalp psoriasis has not been studied extensively, although some characterization of the microbiome in psoriatic lesions has been performed, finding a relative imbalance of Streptococcus, Staphylococcus and Malassezia compared with healthy skin. This recommendation did not reach consensus on the first round of the Delphi-like questionnaire. However, after exposing the evidence on the role of the microbiome in seborrheic dermatitis and mild psoriasis, experts agreed on this recommendation.

**Hair transplantation**

*Hair transplant should be considered in some cases of frontal fibrosing alopecia.* The effectiveness of HT in androgenetic alopecia and secondary scarring alopecia is well established, but whether other types of alopecia could also benefit remains controversial. A systematic review showed both positive and negative results in patients with FFA and LPP: patients stabilized for at least 2 years and treated with anti-inflammatory drugs pre- and post-transplant had better results than those who did not. In a multicentre review of 51 FFA patients, stabilized patients (no progression of the alopecia on the frontotemporal hairline after 12 months)
that underwent HT experienced good but temporary results – only 41% of the grafts survived after 5-year follow-up, despite maintaining the medical therapy.15 However, 82% of patients were globally satisfied with the procedure. Hair transplantation in FFA patients is challenging, as the affected area is not well defined and the donor area should be accurately selected with dermoscopy. Therefore, the experts agreed that HT should only be considered in some selected cases of FFA, after a careful discussion with the patients about the expected results and durability of the transplanted hairs.

Hair ageing

Among hair disorders, hair ageing is an entity of its own requiring specific patient education and management. Age-related hair loss has been widely debated over the years, and several clinical and pre-clinical studies have been conducted in this area. A new focus has arisen around the role of the hair follicle environment in hair ageing.64,65 A study by Cao et al.66 used mice to transplant hair follicles from an old tissue environment to a young one and showed that some molecular processes could be reversed. Due to our lifespan, ageing studies in humans are more complicated and data are rather limited.67,68 Further research should focus on discerning the differences between hair ageing and androgenetic alopecia, which are commonly confused. All experts agreed on hair ageing being a specific field among hair disorders that should be managed accordingly.

Experimental evidence supports the need for clinical studies to assess whether antioxidants could be a supportive measure for individuals suffering from clinical signs of hair ageing. Oxidative stress has been studied as a trigger factor in hair ageing for some time, but whether supplementation of antioxidants could restore the redox imbalance and reverse the ageing process in humans remains unknown25,26 and further research is needed.

Evidence-based hair cosmetics

An innovative generation of in vitro models is needed to closely reproduce native hair follicle by using long-term organ culture and tissue engineering. They will be useful to better understand hair follicle biology and to improve alopecia treatment before clinical trials in patients. A better understanding of the molecular mechanisms of hair follicles and new screening tools might discover new therapeutic options that could be ultimately used to treat patients with different types of alopecia. To date, cell culture models – 2D or 3D tissue engineering models – are the most used in basic research.69-71 However, experts demand new hair follicle models that mimic the complexity of this biological structure. Recent work72,73 suggests that entire hair follicle might soon be generated from cultured human cells. This could imply a revolutionary treatment for hair loss: to generate enough hair follicles in a dish that can be then implanted into patients.

The identification of active ingredients that specifically target both intra- and extra-follicle signalling pathways (as for example Wnt/B catenin pathway, microcirculation, growth factors, cytokines, hormones and enzymes) could help to improve hair loss treatment. Active ingredients that target key signalling pathways of hair biology are becoming complementary therapies for hair loss,74-76 but further research is needed to identify new molecules that target specific signalling pathways. Basic research and hair follicle models could be used to both identify new key players in hair biology and to screen active ingredients and select the better extract to further do clinical trials.

Nutritional deficiencies should be corrected by diet supplementation or nutricosmetics to improve Telogen Effluvium. Even though several studies have shown that patients with alopecia present low levels of ferritin, iron, vitamin D or zinc,16,17,20,22,27 the role of the micronutrients in hair loss has been widely debated. However, nutricosmetics could be a useful supplement to improve the management of some hair disorders, like telogen effluvium. Well-designed clinical trials are crucial to elucidate the efficacy and safety of nutritional supplementation.

Patients with telogen effluvium could benefit from oral iron supplementation in order to reach ferritin levels >40 μ/L. A controversial aspect of telogen effluvium and other hair loss disorders is the contribution of vitamins and minerals supplementation on the course of the disease. Several studies have been performed, but conclusions are inconsistent.16,19,21,78,79 Regardless, many dermatologists routinely prescribe iron supplementation for patients with telogen effluvium and the panelists agreed on maintaining ferritin levels above 40 μ/L in these patients.

Topical dermo-cosmetic formulations may improve hair loss by using specific active ingredients targeting the hair follicle, but also help to improve the quality of life of patients. Experts agreed on this recommendation and emphasized the need for robust clinical trials to evaluate the efficacy of topical cosmetics to improve hair loss. Some indications that topical hair lotions and shampoos containing active ingredients improve hair density and prevent hair loss have already been proposed but scientific evidence is still missing.

Overall, this study has reached consensus in emerging topics in trichology, in areas with limited evidence and variability in the clinical practice. However, our study also has some limitations: the recommendations are not based on an exhaustive systematic review so some evidence may have been missed. On the other hand, the Delphi technique only provides qualitative
results, from the punctuation on the degree of agreement of the panelists with the recommendations and statements. Besides, considering that most panelists were Spanish (69%), they may not be representative of the whole specialist population.

Conclusions
Despite the extensive number of studies published, hair disorders still represent a common complaint in the clinics, probably due to the specific characteristics of each type of hair disease. The recommendations agreed in this study may be useful in clinical practice for dermatologists. However, further studies should be conducted to validate the benefits of some of the new treatments and techniques, and to establish protocols that would improve the management of these diseases.

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Author contributions
All authors made substantial contributions to conception and design and acquisition of data; took part in drafting the article or revising it critically for important intellectual content; gave final approval of the version to be published; and agreed to be accountable for all aspects of the work.

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Appendix 1

List of panellists (Trichology Experts Network)

| Name                  | Last name                     | Country       |
|-----------------------|-------------------------------|---------------|
| Antonio José          | Alcaide Martín                | Spain         |
| Manuel                | Almagro Sánchez               | Spain         |
| Rubina                | Alves                         | Portugal      |
| Jose                  | Castineiras González          | Spain         |
| Andrea                | Combalia Escudero             | Spain         |
| Cristina              | De hoyos Alonso               | Spain         |
| Maria Elena           | De las Heras Alonso           | Spain         |
| Rachita               | Dhurat                        | India         |
| Andrei                | Doroshkevich                  | Russia        |
| Nkechi                | Echenchukwu                   | Nigeria       |
| Beatrix               | Fernández Jorge               | Spain         |
| Javier                | Forteza                       | Spain         |
| Manuel                | Galán Gutiérrez               | Spain         |
| Cristina              | Garcia                         | Spain         |
| Alba                  | Gomez Zubiaur                 | Spain         |
| Dimitar               | Gospodinov                     | Bulgaria      |
| Angela                | Hermosa Gelbard               | Spain         |
| Maria                 | Herrero Moyano                | Spain         |
| Maribél               | Iglesias Sancho               | Spain         |
| Alejandro             | Lobato Berezó                  | Spain         |
| Nino                  | Lortkipanidze                 | Georgia       |
| Oliszewska            | Malgorzata                    | Poland        |
| Nuria                 | Martí Fajardo                 | Spain         |
| Alejandro             | Martín Gorgojo                | Spain         |
| Constanza             | Martínez Mera                 | Spain         |
| Grisha                | Mateev                        | Bulgaria      |
| Joan Francesc          | Mir Bonafé                     | Spain         |
| José María            | Mir Bonafé                     | Spain         |
| Iria                  | Montero Perez                 | Spain         |
| María                 | Moreira Fonseca               | Portugal      |
| Antonio               | Morillo-Velarde Chiclana      | Spain         |
| Ana María             | Mota Burgos                   | Spain         |
| Yuliya                | Ocharenko                     | Ukraine       |
| Cristina              | Paradela García               | Spain         |
| Carmen                | Penabad                       | Spain         |
| Javier                | Pedraz Muñoz                  | Spain         |
| Juan                  | Peris Marti                   | Spain         |
| Ramon                 | Pigem Gasos                   | Spain         |
| Ana Rita              | Rodríguez Barata              | Spain         |
| Lisset                | Sarda Perez                   | Spain         |
| Tatiana               | Silyuk                        | Russia        |
| Filipa                | Ventura                       | Portugal      |
| Francisco             | Vilchez-Marquez               | Spain         |
| Anja                  | Vujovic                       | Belgium       |
| Anna                  | Waszkiew-Burnat               | Poland        |

Appendix 1 Continued