ragweed pollen protein extract (RGW), followed by a 5-week break for any inflammation to resolve, before becoming pregnant. Their offspring were challenged with RGW intranasally at 4 weeks of age, which resulted in mast cell degranulation in the lungs and airway hyperreactivity in response to a broncho-constricting stimulus. This response was not seen in control groups that included non-sensitized dams or offspring challenged with a nonspecific antigen, or when mice were challenged after 6 weeks of age. The results indicate that allergic dams can transfer sensitization to their offspring in an antigen-specific, time-limited manner. Antibody transfer from mother to fetus is mediated by the neonatal Fc receptor for IgG (FcRn). However, recent in vitro evidence indicates that FcRn might also transfer IgE in complex with IgG. When the active RGW sensitization protocol was carried out in FcRn-deficient mice, their offspring did not mount an allergic airway response to RGW. Similarly, in the passive immunization model, IgE could not be detected on fetal mast cells of FcRn-deficient dams. TNP-specific IgE, but not TNP-specific IgG, could sensitize offspring to neonatal TNP exposure. Thus, IgE, transferred by FcRn, is sufficient for allergen sensitization in offspring.

In humans, the authors used multicolour flow cytometry to describe a subset of mature mast cells that is present in human fetal skin by the second trimester of pregnancy. Importantly, human fetal skin was shown to contain granulated mast cells that colocalize with IgE. In summary, the data indicate that prenatal exposure to maternal allergen-specific IgE in mice, even when induced weeks before pregnancy, can affect the immune response to a first exposure to the same allergen after birth, which suggests that predisposition to allergic disease may be determined in part before conception. —Kirsty Minton

ORIGINAL ARTICLE Muallem, R.; et al. Fetal mast cells mediate postnatal allergic responses dependent on maternal IgE. Science 370, 941–950 (2020)

subset at day 3 for adoptive transfer experiments. When injected into the eyes of mice with optic nerve injury, only the immature neutrophil subset induced marked RGC survival and axon regeneration. Nerve growth factor and insulin-like growth factor 1, which promote neurite outgrowth by human cortical neurons in co-cultures. Promyelocytic cell line, with features characteristic of the mouse Ly6G<sup>+</sup> immature neutrophils, could stimulate regrowth of severed RGC axons following adoptive transfer into mice and promote neurite outgrowth by human cortical neurons in co-cultures. These findings support a growing body of literature revealing heterogeneity and functional sub specialization of neutrophils and a potential new avenue for the treatment of CNS injury.

—Lucy Bird

ORIGINAL ARTICLE Sas, A. R.; et al. A new neutrophil subset promotes CNS neuron survival and axon regeneration. Nat. Immunol. 21, 1496–1505 (2020)