

## Research Review Panel

*Presented by Drs. Maryanne M. Senna, George Cotsarelis, Ronda Farah and Brigitte Sallee*

The Research Session at the CARF Patient-Physician Conference provided updates on studies related to the treatment and causes of cicatricial alopecia. On the panel were Dr. Maryanne M. Senna from Massachusetts General Hospital, Dr. George Cotsarelis from The University of Pennsylvania, Dr. Ronda Farah from the University of Minnesota, and Dr. Brigitte Sallee from Columbia University.

Dr. Cotsarelis first introduced the normal hair cycling process and the stem cells and other factors involved in hair follicle growth. He then discussed goals of future treatments including the activation of stem cells and creation of new hair follicle units through tissue engineering. He reviewed the findings of a paper he published in *Nature* that showed new hair follicle formation after micro-wounding of non-hair bearing skin in mice and mentioned that Follica is a company that is developing a scalp micro-wounding device that may hold promise for cicatricial alopecia. Further, his laboratory is working on ways to prevent scars from forming in skin, as well as the development of hair follicle scaffolds that can be used in growing human hair follicles.

Dr. Senna discussed ongoing research that her team is conducting at MGH looking at treating lichen planopilaris and frontal fibrosing alopecia with a fiber optic brush that delivers narrowband ultraviolet B light to the scalp. This type of light has been used for decades in dermatology to treat common inflammatory skin conditions including psoriasis and eczema. The light is absorbed by the hair on the scalp, so until the more recent development of the fiber optic brush, it was difficult to reliably get the light to the level of the scalp for effective treatment of scalp conditions. At the time of the conference, Dr. Senna's team had treated 6 patients with LPP or FFA with this light brush device. All patients had improvement in scalp redness, 83% reported stable (mild) or reduced scalp itch, and 83% of patients had increased thickness of their hair shafts. Dr. Senna's team hopes to complete this study and report their findings on all patients by early 2019.

Dr. Farah discussed the use of platelet rich plasma (PRP) in treating cicatricial alopecia. Platelets are small fragments that constitute about 6% of all blood cells and are reservoirs of critical growth factors (GFs) that may promote hair follicle differentiation. PRP is prepared from a patient's own blood which is collected in a special tube and centrifuged before being injected into the affected areas of a patient's scalp. The idea is that the growth factors released from the platelets promote hair growth and skin healing. In cicatricial alopecia patients, the University of Minnesota performed this procedure every 4-8 weeks for 3 sessions. Their study is currently focusing on understanding what influences some of the variability in patient responses to PRP in general, and working on optimizing these factors in using PRP to treat patients with scarring hair loss.

Brigitte Sallee, MD reviewed the experience at Columbia University of using Janus kinase (JAK) inhibitors in treatment resistant lichen planopilaris (LPP). Eight patients were treated with oral tofacitinib (5 mg twice a day in 6 patients, 5 mg three times per day in 2 patients), and showed

improvement in the LPP activity index (LPPAI) from 30-94% after treatment. These patients were noted to have an LPP flare upon tofacitinib withdrawal, and disease rescue upon re-initiation of therapy. No adverse effects were reported, and there were no significant changes from pre-treatment values in laboratory values. This small pilot study suggests that although very costly at \$3000-\$6000/month, JAK inhibitors could represent a promising treatment option for LPP when conventional treatments fail. Larger randomized, placebo controlled trials are needed to correlate these findings.