Researchers at the University of South Florida have identified a molecule, the chemokine (C-C motif) ligand 2 (CCL2), whose recombinant human protein form holds promise in preventing Abnormal Uterine Bleeding (AUB) in women using long-acting reversible contraception (LARC).

Over a million unintended pregnancies occur in the USA each year due to either discontinuation or misuse of contraceptives. LARC sub-dermal implants and intrauterine devices are ideal contraceptive since they are long acting, do not require strict adherence to a daily pill, or the discomfort of a patch or vaginal ring and because they are free from the thrombotic risks of estrogen-containing combined hormonal contraceptives. However, the major reason for discontinuation of LARCs is the occurrence of unpredictable, intermittent, AUB. Discovering molecular/cellular targets that contribute to LARC-induced AUB is essential to creating better contraceptive products.

Our inventors have found that two progestin agents used in LARCs, medroxyprogesterone acetate (MPA) and etonogestrel (ETO) reduce proliferation of endometrial vascular smooth muscle cells (VSMCs), resulting in the production of thin-walled hyperdilated fragile microvessels that are prone to bleed. Further studies have determined that the administration of recombinant CCL2 (rCCL2) reverses this LARC effect. This invention utilizes this knowledge in the development of pharmaceutical compositions that can inhibit AUB associated with use of LARCs. These novel agents are comprised of CCL2 polypeptides that can be administered prophylactically in dosage form for oral, injectable, or transdermal delivery. The merits of this adjuvant treatment have the potential to effectively reduce side effects in women using LARCs through improved contraceptive formulations.