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## Advancements in managing diabetic foot: Bioengineering stem cells

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As a major cause of leg amputation in the United States, diabetic foot has been a quite challenging problem for physicians, surgeons, scientists, patients, and the society. Diabetic foot is a complicated pathogenesis progress, with nerve, vessels, local pressure, inflammation and infections involved. Local debridement and tissue regenerative are quite essential for better outcome. The local necrotic tissues, infections, inflammation and other insults block the growth of the vessels and tissues, and thus prevent the wound healing. By thorough debridement, these insults were removed and the new environment comes into being, which offers fresh, better oxygenated, and relatively healthier setting that promotes the growth of new tissues and vessels. As a growing promise, stem cells have been used for tissue and vessel regeneration after the debridement. From the origin, there are mesenchymal derived stem cells (MDSC) and adipocytes derived stem cells (ADMS). It can be autologous or endogenous. Endogenous stem cells and tissue-engineered implant can be applied with immunopression with scalable tech using biconstruct transplantation. Exosome from stem cells culture media is found rich in MALAT1 that is essential for wound healing. Local injection of neural growth factor (NGF), TPO, soluble stem cell recruitment factors (SDF-1), inflammation-modulators, progenitors, nitrate oxide (NO), hypoxia indicible factor (HIF-1a) can promote the growth of vessels, angiogenesis, and the regeneration of the tissues. Local light energy can also be used for better outcome. Each has pros and cons. Most work is still at the stage of animal models and experimental cells. With better and more delicate work done, not only it will benefit diabetic foot, but wound care and regeneration of any kind.

### Recent Publications

1. Cheryl Wang, MD, PhD. Happy booster, How positive attitude promotes health, reduces stress, enhances performance, accelerates performance, and boosts happiness. IJDMD 2018, 3(4): 1-4.
2. Cheryl Wang, MD, PhD. Happy booster. Outskirtspress.com. 2018. ISBN 9781478794790.
3. Cheryl Wang, MD, PhD, Tongying Zhang, Jiali Wang, Shaoqing Wang, Xiaoyue Xu, Yiheng Wang. Our family chicken soup to all the beautiful you: my gratitude journal to you all. Outskirts press, 2017. ISBN 9781478791089.
4. Wang C. The effect of dietary protein on weight loss, satiety and appetite hormone. ASNH, 2019, 3(2): 96-102.
5. Wang C. Chorea associated with nonketotic hyperglycemia: a case report. International Journal of diabetes and metabolic disorder, 2019, 4(1): 1-2

### Biography

Cheryl Wang, MD, PhD, earned her MD at Binzhou Medical College, MSc., Endocrinology and metabolism, internal medicine in Shanghai Second Medical University (now Shanghai Jiaotong University), PhD in Science, Endocrinology and metabolism, internal medicine at PLA medical college. She did internal medicine residency and trained as an Endocrinologist in Donying People's Hospital, China, did surgery residency at Mount Sinai and Rutgers in the United States. She was a fellow of obesity at Pennington, of Diabetes at UTHSCSA, of endocrinology at Mayo clinic, of Anesthesia at UB and Columbia Uni, of immunology, surgery, and ob & gyn at Pitts, of hematology and oncology at UM, a CRC at Cetero, a tech at RIKEN, a translator, medical writer, and editor of Medimedia and many companies, an assistant professor at UB and Pennington, a professor and endocrinologist at Affiliated Hospital of Taishan Medical College. She also had short training at Harvard medical centers, Cleveland Clinic, Cornell, Banner health, SUNY, UB, etc. She is currently a distinguished professor and endocrinologist at Shengli Oilfield Central Hospital. She had accomplished her masterpiece, her hard-won wisdom, "happy booster-how positive attitude promotes health, reduces stress, enhances performance, accelerates success and boosts happiness", the best of America and Chinese best, the most positive energy ever, and a Nobel Prize "Winner-to-be".

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