Postdoctoral Fellowship Description

The **Synthetic Regeneration and Systems Physiology Laboratory (SRSPL)** at Columbia University is seeking a motivated postdoctoral fellow to lead our efforts in the development of functional genomics platforms for *in vivo* wound healing and skin immunological studies. The selected fellow will be part of a transdisciplinary team and will be mentored in the world-renowned environment of the Columbia University Irving Medical Center. This enriching postdoctoral training program offers a balance of structured learning and professional development that fosters an environment to advance individual career success.

We're developing several innovative platforms to understand tissue regeneration at organ scale. The selected fellow will be a technical expert who will advance these technologies and develop additional methods to study regenerative wound healing in organoid and *in vivo* mammalian models. Working in close collaboration with the Columbia Stem Cell Initiative, the Herbert Irving Comprehensive Cancer Center, and the Columbia Genome Center, the postdoctoral fellow's work will systemically identify molecular targets that affect mammalian tissue regeneration through perturb-sequencing genome-wide knockout (CRISRPx) screens in skin organoid and *in vivo* models. The results of this research will be published in one or more scientific publications targeting high impact peer-reviewed journals.

Our mission

The Synthetic Regeneration and Systems Physiology Laboratory at Columbia University exists to uncover new scientific knowledge in biomedicine and to train bright talent in the art of science. We are motivated by one question: How do heterogenous cells synchronize their activity to restore damaged tissue? Our research thus aims to define the molecular and biophysical drivers of tissue healing at organ scale and to leverage this knowledge for better therapeutic strategies.

Responsibilities will include:

1. Generate in vivo gene delivery strategies and execute pooled CRISPR screening in organoid and *in vivo* systems.
2. Work with team to utilize existing pipeline for deconvolution of CRISPR screening and RNA-seq data.
3. Perform experiments to validate top candidate genes using a range of molecular and cellular assays, including but not limited to scRNA-seq, and multiparameter flow cytometry, high-content light-sheet imaging.
4. Performing organoid cell cultures using primary tissue and induced pluripotent stem cells.
5. Proactively seek out new information in the literature and incorporate this into individual projects as well as the overall laboratory research program.
6. Resolve research hurdles by communicating effectively with PI and team members.
7. Collaborate with functional and technical experts to facilitate scientific achievement.
8. Maintain a high level of productivity in the laboratory setting.
9. Demonstrate a high degree of responsibility in maintaining scientific standards, and safe laboratory practices for self and reporting staff.
10. Effectively write and communicate research materials.
11. Publish research in peer-reviewed journals and present work at scientific conferences aligned with business objectives.

Minimum Qualifications:

- PhD in Cell Biology, Molecular Biology, Genetics, Biomedical Engineering, Computational biology, or a related field.
- Extensive experience in cell culture and molecular biology techniques.
- Record of scientific initiative and creativity in research or development activities.
- Capable of independently designing and executing experiments, interpreting data, and identifying appropriate follow-up strategies.
- Excellent project management skills. Ability to multitask and work within timelines.
- Demonstrated scientific writing skills evidenced by a rigorous publication record and strong verbal communication skills.
- Global mindset to thrive in a diverse lab culture and environment.
- Experience with mouse work and immune cells is preferred
- Machine learning and computational biology experience is appreciated.
- Three letters of recommendation (including one from the Thesis Advisor) sent to Woappilab {at} gmail.com
- Letter of intent to pursue Postdoc