

2022-2023 Chen Lab summary

Last year was exceptional. It marked the first year of the post-pandemic era, which reshaped the local and global environment, as well as lifestyle. The office atmosphere wasn't as vibrant as it used to be. It also signified the first year after Dr. Chen's tenure. Despite his expectations of a more relaxed period, he found himself becoming busier. The lab underwent a significant transition with the departure of a few senior members. Nonetheless, the lab maintained its momentum, achieving remarkable progress in training and research.

Jing and Ke started their independent research labs in China, while Mengying embarked on a journey in industry. After a year away from the lab, Shan-Ju secured a faculty position in Taiwan. The lab takes great pride in their accomplishments and extends its best wishes for their success. Additionally, the lab welcomed new members including postdoc Dmitry, data scientist Xiaodan, PhD student Nabas, and interns Arav, Eileen and Alexis. The lab sustained a team of around 10 members.

In addition to those who landed their dream jobs, other lab members made great achievements. Here are a few examples: Rama's K99 resubmission received a fundable score, Xiaodan and Ruoqiao completed their first first-author manuscripts, Dmitry's drug candidates were successfully validated in the wet lab, and Dr. Chen participated in the NIH study section for the first time.

The lab encountered challenges in publishing our major papers, including Rama's gamma delta T cells research, Jing and Mengying's de novo drug design project, Ke's study on metastatic cancer comparison, and Eugene's bispecific antibody discovery work. Despite these challenges, there were still some positive developments: the lab successfully published the DIPG drug repurposing study, a nearly five-year endeavor that commenced in 2018, as well as the COVID repurposing work, which demanded substantial lab effort during the pandemic. Shan-Ju's TransCell manuscript was accepted after numerous rounds of revisions across multiple journals. Additionally, we achieved our milestone of publishing our first-ever papers in the EHR field. We believe we will find the best venues for these legacy projects next year. That remains Dr. Chen's highest priority.

Dr. Chen's second priority is to build an AI center for drug discovery at MSU. The efforts have been propelled by the SPG grant from the MSU foundation, which was obtained in 2023 summer. Dr. Chen and his team have been striving to bring this center to fruition. The strengthened partnerships with clinical collaborators like Corewell Health and Henry Ford Health, in conjunction with the MSU drug discovery program and numerous experimental and computational labs, have positioned us to advance to the next phase: the establishment of a formal center focusing on transcriptomics-based drug discovery.

To make a significant impact in drug discovery, we must translate our findings. This leads us to our third priority: establishing a company for commercialization. We firmly believe that a

successful biotech startup must be rooted in cutting-edge science. We are committed to not only publishing our exceptional research but also striving to bring it into the realm of innovation.

Despite the pandemic's adverse effects on various aspects of our lives, including shifts in the environment and lab dynamics, our lab has demonstrated resilience. We have confirmed two new spaces at GRRC and the life science building. We aim to foster a vibrant research environment in both campuses.

Finally, we extend our appreciation for the support of our funders in advancing our research agenda. Beyond the two active R01s, we obtained a supplement award to further our Alzheimer's disease research and secured a supplement award for the acquisition of deep learning servers. We are grateful for the financial support from the Mall family, the Frederik Meijer Heart and Vascular Institute, the MSU foundation, the Corewell Health and MSU alliance, and the Henry Ford Health and MSU alliance, as well as the unwavering support from the leadership.

We wish a productive year for our current/past trainees and our collaborators.

Bin Chen
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