RENBIN YANG

●Phone: 301-795-5704 ●renbin.yang@yale.edu
266 Whitney Avenue, Bass Center 323, New Haven, CT 06511

PROFESSIONAL SKILLS

CryoEM and Structural Biology: 4+ years of experience in cryoEM sample preparation, TEM operation and data collection.

- Proficient in both frozen hydrated and negative staining sample preparation. Extensive experience on various blotting equipment such as FEI Vitrobot, Leica EM gp2 plunge freezer and manual plunge freezer. Deep understanding in the choice of the right blotting equipment and condition for different samples. Expert on optimizing frozen conditions and trouble shooting.
- Proficient with equipment operation and alignment for a variety of TEM. Including Tecnai T12, Tecnai TF20 and FEI Talos L120C. Familiar with 200 KV Glacios and Titan Krios 300 kV.
- Proficient in EM data collection by either EPU or SerialEM for both Single Particle and tilt-series.
- Experienced in EM data processing, analysis and structure refinement.

Computer: Experienced in Linux command operation and script coding. Proficient in IMOD, Relion, Cryosparc, Eman2 and Chimera.

EDUCATION

INSTITUTE OF BIOPHYSICS, CHINESE ACADEMY OF SCIENCES — **Beijing, China**
Ph.D., Biochemistry and Molecular Biology — *Sep 2005-Dec 2012*
- Outstanding Graduate Student — *2011*

CHINA AGRICULTURAL UNIVERSITY — **Beijing, China**
B.S., Biological Science — *Sep 2000-Jun 2004*
- Three-year top 5% student

EXPERIENCE

MB&B, SCHOOL OF MEDICINE, YALE UNIVERSITY — **New Haven, CT**
Associate Research Scientist — *Jan 2019-Present*

- Co-founded the Zhang lab. Led the subgroup of cryoEM structural study on virus transport machinery. Collaborated extensively with other groups on a number of cryoEM projects: mouse sperm tail tomogram sample, dynein-lis1 complex sample and fgl1-lag3 complex sample.
- Coordinated and supervised others on mouse sperm sample supply. Prepared the frozen-hydrated mouse sperm tail sample on Quantifoil grids by back blotting using either manual or automated plunge freezer. Set up 100 tilt-series data collection on 200 KV Glacios CryoEM. Analyzed the preliminary tomogram data by IMOD.
- Optimized the assembly condition of human dynein-lis1 complex by checking negative staining sample prepared with either uranyl acetate or uranyl formate solution. Collected hundreds of images of the uranyl formate stained sample on FEI Talos L120C, processed the data by IMOD and generated 2D model in Relion3.0.
- Cooperated with others on fgl1-lag3 purification. Checked the sample quality by negative staining EM. Optimized the frozen-hydration condition.
- Optimized the protocol of dynactin purification from scratch: two rounds of cation exchange, two rounds of sucrose cushion/gradient, one Mono Q and one TSKgel G4000 (Tosoh). Optimized the protocol of dynein complex purification. Solved the problem of degradation and precipitation. Obtained both of these complexes with very high purify that is good enough for cryoEM study. Regularly checked these samples by negative staining EM.
- Assembled Dynein-Dynactin-Bicd2 complex. Analyzed the conformation of the sample by negative staining EM.
- Coordinated and supervised others on virus production, virus related protein purification and dynein microtubule gliding assays using the TIRF microscopy.
- Proposed new projects and engaged in proposals and grant writing.
- Participated and presented in internal group meetings, project meetings, lab meetings and local workshops and journal clubs.

NIDDK, NATIONAL INSTITUTES OF HEALTH **Bethesda, MD**
Postdoctoral Fellow *Feb 2013-Dec 2018*

- Key member of Craigie lab focused on HIV-1 intasomes (integrase complexed with substrate) structural study. Optimized and scaled up the integrase protein expression by using fermenter. Optimized and scaled up the integrase purification process by customized SEC column. These improvements are critical for cryoEM sample supply because of the very low assembly efficiency of intasome complex. Collaborated with staff scientist Min Li, assembled the engineered intasomes in which integrase is tagged with small peptide sso7d to make it relatively more stable. Checked the quality of the sample by negative staining regularly. Coordinated with collaborators on data collection and processing. (*Passos et al., Science, 2017 Jan*)
- Collaborated with Min Li, assembled the wt intasomes without the sso7d tag so that closer to its native conformation. Prepared both the negative staining and frozen-hydration samples regularly, checked the sample quality on T12 and F20 Frequently. Collected the data on both 200 KV F20 and 300 KV Titan Krios cryoEM, analyzed the data by Relion2 and cryoSPARC2 and finally generated 3d model at the resolution near 4.9 angstrom. (*Li et al., JMB. In press*)
- Collaborated with others, developed a simple and robust protocol for high yield expression of perdeuterated proteins in E. coli. (*Cai et al., JBNMR, 2016 Sep*)
- Presented in internal group meetings as well as joint branch meetings in front of 6 groups regularly.

INSTITUTE OF BIOPHYSICS, CHINESE ACADEMY OF SCIENCES **Beijing, China**
Graduate Research Assistant *Sep 2005-Dec 2012*

- Developed a novel T-type enzyme-free cloning method. (*Yang et al., Mol Biotechnol. 2013 Sep*)
- Crystallized the N-terminal domain of protein MSMEG_5706 for structural study.

CHINESE MILITARY ACADEMY OF MEDICAL SCIENCES **Beijing, China**
Research Intern *Sep 2004-Sep 2005*

- Constructed the plasmid for mouse STAT3 gene knockout and identified the null mutant ES cell line.

PUBLICATION

- Dario Oliveira Passos, Min Li, **Renbin Yang**, Stephanie V. Rebensburg, Rodolfo Ghirlando, Youngmin Jeon, Nikoloz Shkriabai, Mamuka Kvaratskhelia, Robert Craigie, and Dmitry Lyumkis, CryoEM Structures of the HIV-1 Intasome Strand Transfer Complex. (*Science, 2017 Jan*)
- Mengli Cai, Ying Huang, **Renbin Yang**, Robert Craigie and G. Marius Clore. A simple and robust protocol for high yield expression of perdeuterated proteins in E. coli BL21(DE3) cultivated in the shaker flasks. (*JBNMR, 2016 Sep*)
- **Ren-Bin Yang**, Li-Jun Bi, and Xian-En Zhang. A novel T-type overhangs improve the enzyme-free cloning of PCR products. (*Mol Biotechnol. 2013 Sep*)

MEETINGS

- Min Li, **Renbin Yang**, Dario Passos, Mamuka Kvaratskhelia, Dmitry Lyumkis, Robert Craigie. HIV-1 assembles multiple discrete stable synaptic complex (SSC) intasomes that are active for concerted DNA integration in vitro. (*The 42nd annual meeting on Retroviruses. 2017 May*)

MENTORING AND OTHER RESPONSIBILITIES

- Jun/2019 - present, at Yale
  Work as the lab manager: Coordinate and negotiate with purchasing agents, suppliers and lab members to guarantee cost effective research supply. Keep detailed record of supply inventory as well as order history. Coordinate with customer service for equipment maintenance and services. Work out rules and policies for equipment scheduling. Lead the subgroup of two postdoc and one PhD on virus transport machinery. Work out experimental design together, coordinate with each member for the responsibility, generate data and report to supervisor.
- Jun/2017 - May/2018, at NIDDK
  Co-supervised and mentored couple of summer intern students and one postbac student.