

Organoid & Single Cell Isolation Shared Resource

Director: Lanlan Zhou, MD, PhD



Overview

The SR offers organoids generation and maintenance, characterization and genetic modification of organoids, and drug screening of organoids. The services provided allow LCC members to better recapitulate the tissue of origin, retain the heterogeneity of the original tumor, and study tumor evolution and treatment response for precision cancer medicine.

Key Services

- Advise and assist investigators with the production of organoids
- Provide support for the growth and maintenance of organoid and spheroid cultures including passaging
- Maintain a collection of established organoids that can be provided to investigators for research
- Develop gene knockout and overexpression matched patient-derived organoids
- Assist investigators with planning of drug screens.
- Provide support for grant submissions

Value Added

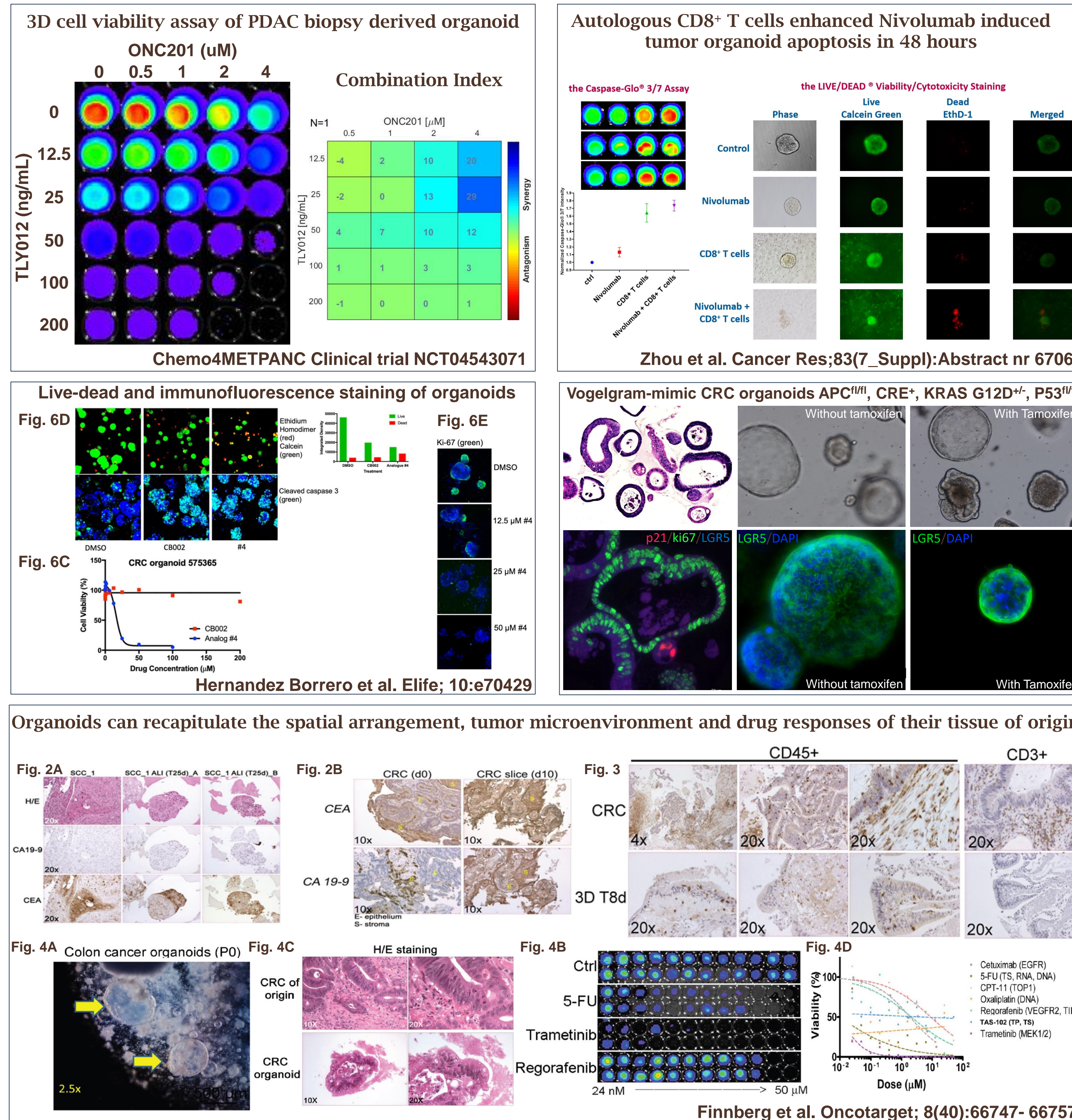
- Access to a broad collection of organoids and proliferation supplements
- Unique: the only training and technical service like this in the state
- Consultation benefits: Have one-one one consultations with PIs that want to use the technology. Meet with them after to review and interpret data

Major Equipment /Technologies

- Tissue culture hood, incubator, fluorescent microscope, Whitley H35 Hypoxystation, Xenogen IVIS Imaging System, Molecular Devices ImageXpress Confocal HT. ai High-Content Imaging System, TellBio TellDx CTC Isolator
- Establish organoids from human and mouse tissue; thaw, initiate and maintain commercially available organoids; characterization, genetic modification and drug screening of organoids



Examples of Scientific Impact

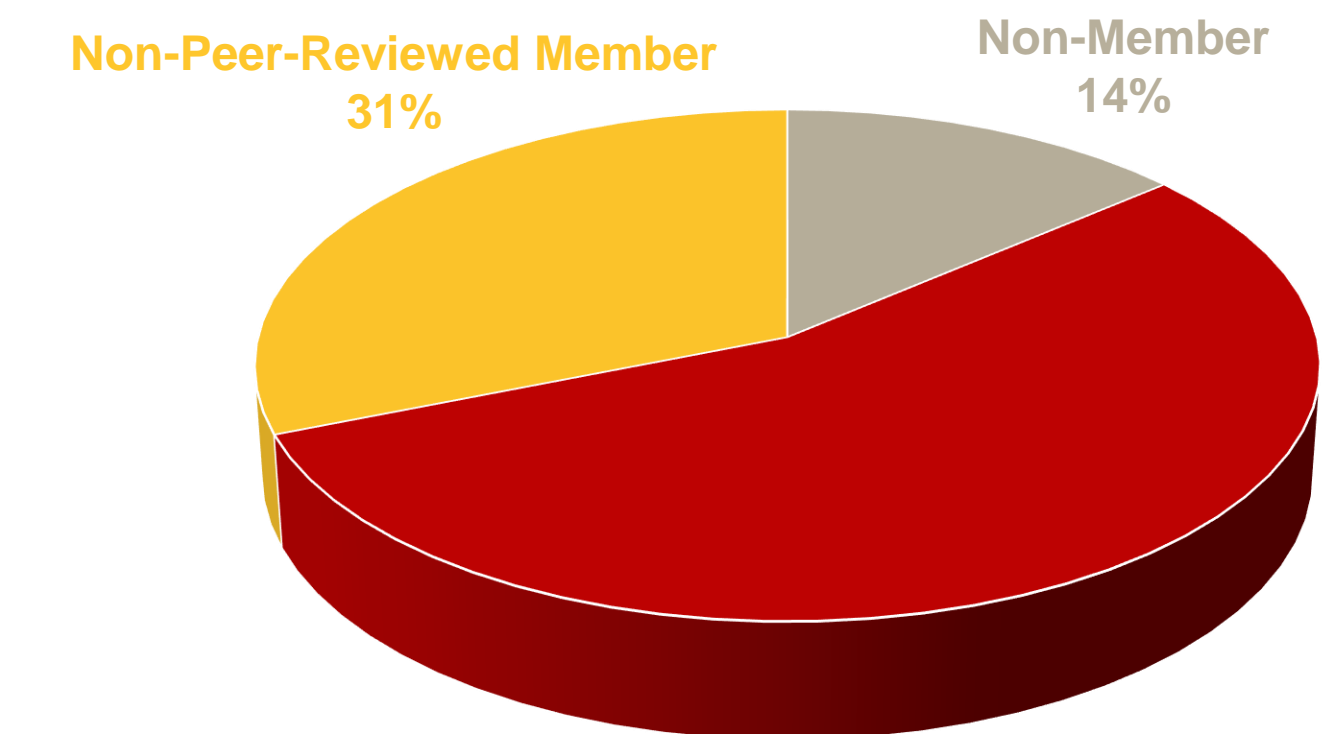


Key Personnel

https://www.brown.edu/academics/biomed/cancer_biology/organoids

- Director: Lanlan Zhou LANLAN@brown.edu
- Senior Research Specialist: Leiqing Zhang

Impact on Users



Peer-Reviewed Member
55%

User Profile

Total Users: 29
 Cancer Center Members Users: 25 (86%)
 Members with Peer-Reviewed Funding : 16 (55%)
 Number of Programs: 2

Key Publications

Hernandez Borrero L, Dicker DT, Santiago J, Sanders J, Tian X, Ahsan N, Lev A, Zhou L, El-Deiry WS. A subset of CB002 xanthine analogs bypass p53-signaling to restore a p53 transcriptome and target an S-phase cell cycle checkpoint in tumors with mutated-p53. *Elife*. 2021 Jul 29;10:e70429.

Zhou L, Zhang L, Carlsen L, Huntington KE, Tajiknia V, George A, De La Cruz A, Navaraj A, Srinivasan P, Schwermann M, Carneiro BA, El-Deiry WS. Co-culture of circulating tumor cells (CTCs)-derived 3D organoids and autologous cytotoxic CD8⁺ T cells: A new functional precision oncology platform. *Cancer Res* 2023;83(7_Suppl):Abstract nr 6706

Future Plans

- Establish a bank of organoids
- Increase users across programs
- Interaction with other shared resources
- Become a self-sustainable service research facility