NC STATE UNIVERSITY

Comparative Medicine Institute

Ke Cheng

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BioTherapeutics and Stem Cells for Regenerative Medicine

Research emphasis:

Dr. Ke Cheng's laboratory studies regenerative medicine by using patient-derived stem cells, biomaterials, micro-RNAs and bioengineering approaches. Translational research is a major focus of the lab. Currently, we are interested in isolating patient-specific and organ-specific adult stem cells and testing their regenerative potential in small/large animal models of diseases. Another focus of the lab is to identify novel micro-RNAs involved in tissue protection and regeneration. The lab is also interested in understanding the mechanisms of stem cell migration and extravasation after delivery.

Application :

- Spheroid stem cells
- Biomaterials and polymers
- Nanoparticles
- Light sheet microscopy
- GMP-grade cell manufacturing

Collaboration potential:

- Various cardiovascular models including myocardial infraction and heart failure in rodents
- Pulmonary fibrosis animal models
- Vascular remodeling and angiogenesis using zebra fish as the model

Selected publications:

Vandergriff A, de Andrade, Tang J, Hensley MT, and **Cheng K.** Intravenous administration of cardiac progenitor cell-derived exosomes mediates heart regeneration after doxorubicin-induced dilated cardiomyopathy. *Stem Cell International*. 2015;2015:960926. doi: 10.1155/2015/960926. Epub 2015 Aug 17.

Henry E, Cores J, Hensley MT, Anthony S, Vandergriff A, de Andrade JBM, Allen T, Caranasos TG, Lobo LJ, **Cheng K*** Adult Lung Spheroid Cells Contain Progenitor Cells and Mediate Regeneration in Rodents with Bleomycin-Induced Pulmonary Fibrosis. *Stem Cells Transl Med.* 2015 Sep 10. pii: sctm.2015-0062. [Epub ahead of print]

Vandergriff A, Hensley MT, **Cheng K**. Cryopreservation of Cardiomyocytes. *Methods Mol Biol.* 2015;1299:153-60. doi: 10.1007/978-1-4939-2572-8_12.

Hensley MT, de Andrade J, Meurs K, Keene B, Tang J, Piedrahita J, Caranasos TG, Li TS, **Cheng K**. Regenerative potential of canine cardiac stem cells. *J Cell Mol Med.* 2015 Apr 9. doi: 10.1111/jcmm.12585.