

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Biology in Space (8)

Author: Prof.Dr. WEIBO ZHENG

Shanghai Institute of Technical Physics, Chinese Academy of Sciences (CAS), China,
weibo_zheng@sina.com

Prof. Zhang Tao

Shanghai Institute of Technical Physics, Chinese Academy of Sciences (CAS), China, haozzh@sina.com

THE LIVE MICROGRAPH TECHNIQUE AND ITS RECENT APPLICATION TO THE SPACE
EXPERIMENT OF STEM CELL'S PROLIFERATION AND DIFFERENTIATION IN CHINESE
SPACECRAFT**Abstract**

In order to study the stem cell's proliferation and differentiation in space, many kinds of Space Cells Reactors have been developed for the different Spacecraft. This paper will introduce the live micrograph technique and the module used in the Chinese space cell reactors, which aimed at obtaining the microscopic image of living cells. There were four auto-focus microscopes (including two fluorescence microscopes) in Tianzhou-1 spacecraft and two auto-focus microscopes in SJ-10 recoverable satellite. The space experiment of stem cell's differentiation were investigated with transgenic GFP Gene through the fluorescence microscope. The microscope comprises a microscope optical system, a light source, an image sensor and a two-dimensional translation stage. The microscope optical system and image sensor were fixed on the two-dimensional translation stage. When the devices were carried in space, the auto-focus microscopes were opened and serial real-time micrographics were successfully obtained. The real-time micrographics showed the changes during proliferation and differentiation of stem cells in space.