

The Body Project: Anatomy, Relationships, and Representation
An Interdisciplinary Graduate Student Conference
University of Missouri
Presented April 12, 2008

James Benson

MU Department of Mathematics

Submitted January 30, 2008

Oral Presentation

What we can freeze from the body and why: a historical, physical, and mathematical introduction

The public often links cryobiology, the study of biological materials at low temperatures, with the science fiction of whole body and head freezing, but in reality successful cryopreservation of biological materials is limited to isolated cells, some tissues, and in some instances organs. Few scientific fields encompass as many diverse disciplines as cryobiology, where chemistry, physics, plant and animal biology, economics, agriculture, oncology, ethics, and management all play pivotal roles. Cryobiology even poses questions such as: are cryopreserved cells alive? In this presentation I will provide a brief history of the field, an overview of the scope of research and applications of cryobiology, and briefly introduce my mathematical research into optimizing freezing protocols.