BIOGRAPHICAL SKETCH

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NAME: ZIESKE, JAMES

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Rockford College, Rockford, IL	BS	05/1976	Biology
University of Michigan, Ann Arbor, MI	PHD	05/1981	Biological Chemistry
University of Michigan, Department of Biological Chemistry, Ann Arbor, MI	Postdoctoral Fellow	06/1982	Cell Surface Glycoproteins and Epidermal Differentiation
Schepens Eye Research Institute and Harvard Medical School, Boston, MA	Postdoctoral Fellow	09/1984	Cell Surface Proteins in Corneal Epithelium

A. Personal Statement

The current application entitled, "Exploring flow-induced crystallization as a critical mechanism driving corneal stromal lamellogenesis", represents a collaboration between Dr. Jeffrey Ruberti and myself. On this proposal, I will be a consultant and will be responsible for interpreting the corneal cell biology results as well as providing advice regarding fibroblast and myofibroblast cultures. Dr. Ruberti and I have been collaborators and friends for over 15 years, and have found that the melding of his engineering approach and my more biological approach has been beneficial for both of us. I am quite pleased to continue this relationship. I am a Senior Scientist at the Schepens Eye Research Institute/MEE and an Associate Professor in the Department of Ophthalmology at Harvard Medical School. I have published over 90 peer-reviewed articles, reviews, and book chapters on the topic of corneal wound repair, demonstrating my expertise in this area. I am particularly excited about the wound-healing aspect of this application where we will examine if myofibroblasts secrete more matrix under stress, for this is highly relevant to my research on corneal fibrosis.

B. Positions and Honors

Positions and Employment

1981 - 1982 Postdoctoral Scholar, Lab of I.A. Bernstein, PhD, University of Michigan, Ann Arbor, MI
1982 - 1984 Postdoctoral Fellow, Lab of I.K. Gipson, PhD, Schepens Eye Research Institute, Boston, MA
1985 - 1990 Assistant Scientist, Schepens Eye Research Institute, Boston, MA
1986 - 1992 Instructor, Department of Ophthalmology (Biochemistry), Harvard Medical School, Boston, MA
1990 - 1995 Associate Scientist, Schepens Eye Research Institute, Boston, MA
1992 - 2002 Assistant Professor, Department of Ophthalmology, Harvard Medical School, Boston, MA
1995 - Senior Scientist, Schepens Eye Research Institute, Boston, MA
2000 - 2002 Associate Director of Research, Schepens Eye Research Institute, Boston, MA
2002 - Associate Professor, Department of Ophthalmology, Harvard Medical School, Boston, MA

Other Experience and Professional Memberships

1989 - Ad Hoc Member, VISA2 Study Section, National Institutes of Health, National Eye Institute
1994 - Ad Hoc Member, VISA1 Study Section, National Institutes of Health, National Eye Institute
1995 - 1998 Cornea Section Program Committee Member, ARVO
1999 - Ad Hoc Member, NEI Special Emphasis Panel (Core Center Grants), National Institutes of Health

2002 -	Ad Hoc Member, NEI Special Emphasis Panel (R03 Reviews), National Institutes of Health
2002 - 2003	Ad Hoc Member, NEI Special Emphasis Panel (Core Center Grants), National Institutes of Health
2003 -	Ad Hoc Member, NEI Special Emphasis Panel (Biomedical Engineering Applications), National Institute of Health
2004 - 2005	Ad Hoc Member, NEI VISA Study Section, National Institutes of Health
2005 - 2008	Permanent Member, AED Study Section, National Institutes of Health
2009 -	Member, NIBIB Study Section

Honors

1972	Scholarship, Rockford College
1973	Scholarship, Rockford College
1974	Scholarship, Rockford College
1975	Scholarship, Rockford College
1983	Individual National Research Service Award, National Institutes of Health
2009	Gold FARVO, ARVO
2013 -	Scholarship Fund, Schepens Eye Research Institute

C. Contribution to Science

1. Cornea Wound Repair: For the past 30 years much of the research in my laboratory has focused on corneal wound repair. We made many original findings including that: focal contacts are formed during corneal epithelial migration; epidermal growth factor is activated during epithelial wound repair; stromal cell proliferation occurs following apoptosis of stromal cells in the wound area; and local activators of TGF-β are expressed in response to corneal wounding.

    a. Zieske JD, Bukusoglu G, Gipson IK. Enhancement of vinculin synthesis by migrating stratified squamous epithelium. J Cell Biol. 1989 Aug;109(2):571-6. PubMed PMID: 2503524; PubMed Central PMCID: PMC2115708.

    b. Zieske JD, Takahashi H, Hutcheon AE, Dalbone AC. Activation of epidermal growth factor receptor during corneal epithelial migration. Invest Ophthalmol Vis Sci. 2000 May;41(6):1346-55. PubMed PMID: 10798649.

    c. Mohan RR, Hutcheon AE, Choi R, Hong J, Lee J, Mohan RR, Ambrósio R Jr, Zieske JD, Wilson SE. Apoptosis, necrosis, proliferation, and myofibroblast generation in the stroma following LASIK and PRK. Exp Eye Res. 2003 Jan;76(1):71-87. PubMed PMID: 12589777.

    d. Blanco-Mezquita JT, Hutcheon AE, Stepp MA, Zieske JD. αVβ6 integrin promotes corneal wound healing. Invest Ophthalmol Vis Sci. 2011 Oct 31;52(11):8505-13. PubMed PMID: 21960555; PubMed Central PMCID: PMC3208190.

2. Stromal matrix synthesis: One of the other main focuses of my laboratory is the assembly of extracellular matrix by stromal fibroblasts in culture. One of our earliest finding in this field involve the co-culturing of epithelial, stromal, and endothelial cells in a 3-D construct. The resulting manuscript was the first to describe basement membrane formation in a culture system. We went on to develop a system where human stromal cells assemble a matrix that mimics the in situ stroma. We have used this system in numerous publications. One of our major findings was that TGF-β3 stimulated assembly of a non-fibrotic matrix.

    a. Zieske JD, Mason VS, Wasson ME, Meunier SF, Nolte CJ, Fukai N, Olsen BR, Parenteau NL. Basement membrane assembly and differentiation of cultured corneal cells: importance of culture environment and endothelial cell interaction. Exp Cell Res. 1994 Oct;214(2):621-33. PubMed PMID: 7523155.

    b. Guo X, Hutcheon AE, Melotti SA, Zieske JD, Trinkaus-Randall V, Ruberti JW. Morphologic characterization of organized extracellular matrix deposition by ascorbic acid-stimulated human corneal

fibroblasts. Invest Ophthalmol Vis Sci. 2007 Sep;48(9):4050-60. PubMed PMID: 17724187; PubMed Central PMCID: PMC4961093.

c. Karamichos D, Guo XQ, Hutcheon AE, Zieske JD. Human corneal fibrosis: an in vitro model. Invest Ophthalmol Vis Sci. 2010 Mar;51(3):1382-8. PubMed PMID: 19875671; PubMed Central PMCID: PMC2868432.

d. Karamichos D, Rich CB, Zareian R, Hutcheon AE, Ruberti JW, Trinkaus-Randall V, Zieske JD. TGF-β3 stimulates stromal matrix assembly by human corneal keratocyte-like cells. Invest Ophthalmol Vis Sci. 2013 Oct 9;54(10):6612-9. PubMed PMID: 24022012; PubMed Central PMCID: PMC3803138.

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

R01 EY005665-31
ZIESKE, JAMES D (PI)
12/01/84-12/31/17
Corneal Epithelial-Stromal Interactions During Regeneration and Fibrosis
The major goal of this project is to understand the mechanisms involved in αvβ6 activation of fibrosis, if αvβ6 is required to stimulate fibrosis, and if TGF-β3 blunts the scarring response.
Role: PI

R21 EY025833-01
ZIESKE, JAMES D (PI)
08/01/15-07/31/17
Development of an in vivo model to mimic human endothelial replacement therapy
Development of an In Vivo Model to Mimic Human Endothelial Replacement Therapy The major goal of this project is to determine if our co-culture model, consisting of primary human corneal endothelial cells cultivated on top of a 3D self-assembled human corneal stromal matrix, can mimic the in vivo process by which the corneal endothelium responds after cell injection therapy, and to determine if the corneal endothelial cells mature and deposit a Descemet's membrane.
Role: PI

R01-EY024031, NIH/NEI
Argueso, Pablo (PI)
01/01/15-12/31/19
CD147 and Corneal Wound Repair
The long-term objective of this study is to determine whether induction of CD147 clustering on the cell surface glycocalyx is a regulatory mechanism of the physiological and pathological remodeling processes associated with wound repair in the cornea.
Role: CSU

R21-EY025256-01, NIH/NEI
Karamichos and Mandal (PI)
04/01/15-03/31/17
Sphingolipid signaling in corneal wound healing and fibrosis
The major goal of this project is to investigate a novel mechanism of corneal scar formation. We will utilize our previous experience using our human 3D culture model in order to dissect the effect of the sphingolipids in human corneal fibrosis using both in vitro and in vivo techniques.
Role: Co-Investigator

Completed Research Support

R01 EY020886-04
ZIESKE, JAMES D (PI)
07/01/11-06/30/16
Transplantation of a self-assembled corneal substitute
The major goal of this project is to investigate the immunology of the transplantation of a human corneal self-assembled matrix into mice that have been engineered to have a human immune system.
Role: PI

R01-EY023568-02, NIH/NEI
Karamichos, Dimitrios (PI)
07/01/13-06/30/16
Documentation of Novel Keratoconus Markers: In Vitro and In Vivo
The major goal of this project is to develop a novel in vitro culture system for the investigation of human keratoconus cells, as well as identify vital proteins and metabolites that are driving the disease both in vitro and in vivo.
Role: Co-Investigator