

CURRICULUM VITAE
University of Alabama at Birmingham
School of Medicine Faculty

DATE: July 01, 2019

PERSONAL INFORMATION:

Name: Suzanne E. Lapi, PhD
Citizenship: USA, Canada

RANK/TITLE:

Professor with Tenure

Department: Department of Radiology, Department of Chemistry
Business Address: Wallace Tumor Institute (WTI) 310F
1824 6th Ave. South
Birmingham, AL 35233-3300

Email: lapi@uab.edu

HOSPITAL AND OTHER (NON ACADEMIC) APPOINTMENTS:

UAB Medical Center, Birmingham, AL 2015 – Present

PROFESSIONAL CONSULTANTSHIPS:

Scientific Advisory Board Member, Bioisotopes LLC, Columbia, MO	2012 – Present
Consultant, The Gollman Group, Inc.	2013 – Present
Consultant, Alpha Source, Inc.	2015 – Present

EDUCATION:

1995 – 2001	B.S.	Simon Fraser University
2002 – 2003	M.S.	Simon Fraser University
2003 – 2007	Ph.D.	Simon Fraser University

MILITARY SERVICE:

Not applicable

LICENSURE:

Not applicable

BOARD CERTIFICATION:

Not applicable

POSTDOCTORAL TRAINING:

2007 – 2008	Postdoctoral Fellow	UCSF Radiology and Biomedical Imaging
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ACADEMIC APPOINTMENTS: (In reverse chronological order)

2018 – Present	Vice Chair of Translational Research University of Alabama at Birmingham Department of Radiology
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2018 – Present	Professor with Tenure University of Alabama at Birmingham
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Department of Radiology
Department of Chemistry

2017 – Present	Division Director, University of Alabama at Birmingham Advanced Medical Imaging Research Division
2015 – 2018	Associate Professor with Tenure University of Alabama at Birmingham Department of Radiology Department of Chemistry
2015 – Present	Cyclotron Facility Director University of Alabama at Birmingham School of Medicine
2014 – 2015	Associate Professor with tenure Washington University Radiology
2013 – 2015	Assistant Professor, Washington University Division of Biology and Biomedical Sciences
2012 – 2015	Adjunct Assistant Professor, Washington University Department of Chemistry
2012 – 2015	Assistant Professor, Washington University Department of Biomedical Engineering
2011 – 2015	Member Washington University Institute of Clinical and Translational Sciences
2010 – 2015	Member Washington University Siteman Cancer Center
2009 – 2014	Assistant Professor Washington University Radiology
2007 – 2008	Postdoctoral Fellow UCSF Radiology and Biomedical Imaging

WORK HISTORY:

2003 – 2007	Ph.D., Thesis Research	TRIUMF PET Group
2005 – 2005	Ph.D., Thesis Research	Oak Ridge National Lab, Physics Division
2005 – 2007	Consultant	Accsys Technology
2002 – 2002	Teaching Assistant General Chemistry II	Simon Fraser University
1999 – 2000	Analytical Chemistry Tech	Stanley Pharmaceuticals
1998 – 1998	Analytical Chemistry Tech	Environment Canada Pacific Environmental Research Center

AWARDS/HONORS:

August 2014	Marie Curie Lecture, International Conference on Isotopes
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August 2010	Mario Nicolini Prize, Terachem, Italy
June 2010	Harry Gray Family Fund Award, Metals in Medicine, NH
January 2007	President's Research Stipend, Simon Fraser University
September 2006	Student Travel Bursary, Tc Symposium, Bressanone, IT
May 2006	2006 Chemistry Poster Competition – First Place, SFU
February 2006	SNM Student Travel Bursary for Midwinter meeting, Tempe, AZ
February 2006	Carl H. Westcott Fellowship, University of Alberta/TRIUMF
December 2005	Student Bursary, Pacific Rim Chemistry Symposium, Honolulu, HI
October 2005	2005 Chemistry Oral Competition – Second Place, SFU
August 2005	TRIUMF Life Sciences Scholarship
July 2005	Student Travel Bursary for 2005 International Symposium on Radiopharmaceutical Chemistry, University of Iowa
May 2005	Student Travel Bursary for Summer School on Targets and Ion Sources for the Production of Radioactive Ion Beams, Oak Ridge, TN
August 2005	Student Travel Bursary for the 288 th American Chemical Society Meeting Philadelphia, PA
September 2004	Student Travel Bursary for International Symposium on Radiohalogens Whistler, BC
November 2003	Graduate Fellowship, Simon Fraser University

PROFESSIONAL SOCIETIES:

Society of Nuclear Medicine	2008 – Present
Board Member	2016 -- Present
Radiopharmaceutical Sciences Council	2008 – Present
Board Member	2011 – Present
Vice President	2014 – 2015
President	2015 – 2016
Continuing Education Session Organizer	2011 – 2017
Society of Radiopharmaceutical Sciences	2008 – Present
Board Member	2015 – Present
American Chemical Society	2008 – Present
Board Member	2011 – Present
Session Organizer	2013, 2015, 2018
American Nuclear Society	2010 – Present
Conference on Isotopes Organizing Committee	2010, 2014
AccApp Organizing Committee	2017

MEMBERSHIPS:

Not applicable

COUNCILS AND COMMITTEES:

International Atomic Energy Agency (IAEA)

- Chief Scientific Investigator, “Production and utilization of Copper-64 and Iodine -124” 2010-2015 (United States Representative)
- Chief Scientific Investigator, “Accelerator-based Alternatives to Non-HEU production of Mo-99 / Tc99m” 2012-2016(United States Representative)
- Chief Scientific Investigator, “Therapeutic Radiopharmaceuticals Labelled with New Emerging Radionuclides (⁶⁷Cu, ¹⁸⁶Re, ⁴⁷Sc)” 2016-present (United States Representative)

Nuclear Science Advisory Committee (NSAC)

Standing Member 2013-2017
SNMMI Representative 2018- Present
Subcommittee to assess the effectiveness of the National Nuclear Security
Administration Global Threat Reduction Initiative's Domestic Molybdenum-99 Program
2013-Present
Isotopes Subcommittee 2014-2015

Working Group on Isotope Harvesting at FRIB: 2010-Present

Organizing Committee: 2012, 2014, 2016 Workshop on Targetry and Target Chemistry
Organizing Committee: 2013 ACS Annual Meeting: Isotope Production, Past Present & Future
Organizing Committee: 2013 Radiometals Meeting
Organizing Committee: 2014 International Conference on Isotopes (8th ICI)
Organizing Committee: 2017 International Topical Meeting on the Applications of Accelerators
(AccApp 2017)

UNIVERSITY ACTIVITIES:

UAB

Appointment, Promotion and Tenure (APT) Committee 2019-Present
Radioisotope and Radiation Safety Committee 2015-Present
 Subcommittee for Human Use 2015-Present
Advanced Imaging Facility Leadership Committee 2015-2016
 Chair of the AIF Oversight Committee 2016-Present
UAB Comprehensive Cancer Center Member 2016 - Present
UAB Alzheimer's Disease Center Member 2016 – Present
School of Medicine Executive Leadership Program 2016- 2018
Council of Postdoctoral Education September 2018-Present
 UAB School of Medicine Representative

Washington University School of Medicine:

Cyclotron Users Group 2009-2015
Positron Emitting Radionuclides Radiation Committee (PERCS) 2010-2015
Animal Studies Committee 2011-2014
Chemistry Faculty Search Committee – Fall 2011
Director, MIR Summer Research Program 2010-2015
Director of Isotope Production 2011- 2015
Moog Scholarship Selection Committee 2010-2015
DBBS Admissions Committee 2013-2015

EDITORIAL BOARD MEMBERSHIPS:

<i>Journal of Nuclear Medicine</i>	2017 - Present
<i>Journal of Labelled Compounds and Radiopharmaceuticals</i>	2015 – Present
<i>Scientific Reports</i>	2015 – Present
<i>Frontiers in Oncology</i>	2013 – Present
<i>American Journal of Nuclear Medicine and Molecular Imaging</i>	2013 – Present

Journal Reviewer (selected): *Journal of Nuclear Medicine, Cancer Research, Molecular Imaging, Applied Radiation and Isotopes, Nuclear Medicine and Biology, Pharmaceutical Research, Current Topics in Medicinal Chemistry, Plos One, Nature Protocols, Molecules, Molecular Imaging and Biology, Chemical Communications, Future Medicinal Chemistry,*

2015: James Patrick Dzandzi (McMaster University)

Past Trainees: Undergraduate Researchers

Gordon Schweitzer, University of Missouri, St. Louis, Biochemistry, 2011-2012
Rachel Waller, University of Missouri-Columbia Biochemistry, 2011
Minjun Hur, Washington University Pre-Med, 2011
Caleb Edwards, Washington University Biology 2011-2013
Amrita Hari-Raj, Washington University Pre-Med, 2012-2013
Chiedza Mupanomunda, Washington University Biochemistry, 2012-2013
Shaun Loveless, Fort Lewis College, Chemistry, 2013-2014
Kaavya Cherkuri, Washington University Chemistry, 2013
Ben Lewis, Washington University Physics, 2013- 2014
Elizabeth Bollinger, Washington University Physics, 2013- 2014
Rebecca Gross, Yeshiva University, 2014
Christopher Sun, Washington University, Chemistry, 2014
Supum Lee, Washington University Biochemistry, 2014-2015
Christina DeFelice, Rhode University Biochemistry, 2014-2015
Laura Wilke, University of Notre Dame, Biochemistry, 2014-2015
George Diehl, Vassar College May 2017-August 2017
Julianne Baker, Johns Hopkins University May 2017-August 2017
Brenda Kiritkumar, University of Alabama at Birmingham October 2017-April 2018
Alec Cacheris, University of Tennessee Knoxville, May 2018-August 2018
Bryant Crenshaw, University of Alabama at Birmingham, 2016-2018
Manar Sakalla, University of Alabama at Birmingham, August 2018-December 2018
Ian Super, University of Alabama at Birmingham, 2016-2018
Rachel Ellis, University of Alabama at Birmingham 2018
Retta El Sayed, University of Alabama at Birmingham 2016-2019

Current Trainees: Undergraduate Researchers

Grace Thaggard, University of Alabama at Birmingham 2018-present
Jose Blanco, University of Alabama at Birmingham 2018-present
Dhruval Gadhia, University of Alabama at Birmingham September 2018-present
Erin King, University of Alabama at Birmingham 2019-present
Caroline Baker, Duke University, 2018-present
Mary Grace O'Malley, Boston College, 2019-present
Rawdah Elbahrawi, University of Alabama at Birmingham, 2019-present

Past Trainees: Postdoctoral Fellows and Graduate Students

Sandeep Jain – Postdoctoral Fellow 2009-2010
Currently Staff Scientist at Sun Pharma Advanced Research Company Ltd, India
Ravindra DeSilva - Postdoctoral Fellow 2010-2011
Currently Staff Scientist at Center for Probe Development, Toronto, Canada
Mai Lin – Postdoctoral Fellow 2010-2012
Currently Staff Scientist at MD Anderson
Albert Chang – Radiation Oncology Resident 2011-2012
Currently Associate Professor, UCLA
Efrem Mebrahtu - Postdoctoral Fellow 2009-2012
Currently Staff Scientist at Advanced Accelerator Applications
Oluwatayo Ikotun - Postdoctoral Fellow 2009-2013
Currently Scientist at BMS
Tara Mastren – Chemistry Graduate Student 2011-2014

Currently Assistant Professor of University of Utah
 Vernal Richards - Postdoctoral Fellow 2012-2015
 Currently Staff Scientist at Zevacor Molecular
 Nora Goscinski – Chemistry Graduate Student 2013- 2015
 Currently High School Chemistry Teacher at Hazelwood West High School
 Nilantha Bandara – Postdoctoral Fellow 2012-2014
 Currently Staff Scientist at Washington University
 Brian Wright – Postdoctoral Fellow 2013-2015
 Currently Research Associate at University of Alabama at Birmingham
 Tolulope Aweda – Postdoctoral Fellow 2012-2015
 Currently Research Associate at University of Alabama at Birmingham
 Jennifer Burkemper – Postdoctoral Fellow 2012-2015
 Currently Research Associate at University of Alabama at Birmingham
 Andrew (Lake) Wooten - Biomedical Engineering Graduate Student 2012-2015
 Currently Staff Scientist at Spectrum Radiopharmaceuticals
 Bernadette Marquez - Postdoctoral Fellow 2012-2016
 Currently Assistant Professor at Yale University
 Xingyu Nie – Biomedical Engineering Graduate Student 2012-2017
 Currently Postdoctoral Fellow at Memorial Sloan Kettering Cancer Center
 Lauren Radford – Postdoctoral Fellow 2016-2018
 Currently Staff Scientist at Curium
 Stacy Queern – Chemistry Graduate Student 2014-2018
 Currently Postdoctoral Fellow at Oak Ridge National Laboratory
 Adriana Massicano – Postdoctoral Fellow 2016-2019
 Currently Staff at University of Alabama at Birmingham

Current Trainees: Postdoctoral Fellows and Graduate Students

Christopher “Shaun” Loveless - Chemistry Graduate Student 2015-present
 Samuel Ferran – Chemistry Graduate Student 2016- present
 Ivis Chaple – Biochemistry Graduate Student 2016-present
 Maxwell Ducharme – Biochemistry Graduate Student 2017-present
 Candace Parker – Chemistry Graduate Student 2017- present
 Jennifer Pyles – Chemistry Graduate Student 2018-present

Fellowship Trainee Awards (Awarded to trainees):

American Cancer Society Postdoctoral Fellowship (Ikotun)	2010 – 2013
Imaging Sciences Pathway Graduate Student Fellowship (Wooten)	2012 – 2013
Society of Nuclear Medicine & Molecular Imaging Postdoctoral Fellowship (Marquez-Nostra)	2013 – 2015
Imaging Sciences Pathway Graduate Student Fellowship (Nie)	2014 – 2015
NIH K99/R00 Award (Marquez-Nostra)	2015 – 2017
SNMMI Predoctoral Fellowship (Chaple)	2019 – 2021

Trainee Travel Awards (Awarded to trainees):

International Symposium on Radiopharmaceutical Sciences 2019	1 award
Workshop on Targetry and Target Chemistry 2018	3 awards
International Symposium on Radiopharmaceutical Sciences 2017	2 awards
Workshop on Targetry and Target Chemistry 2016	2 awards
SNMMI Travel Awards 2016	2 awards
International Symposium on Radiopharmaceutical Sciences 2015	4 awards

Workshop on Targetry and Target Chemistry 2014	2 awards
Radiometals 2013	4 awards
NSSC Summer School at UC-Davis 2013	2 awards
International Symposium on Radiopharmaceutical Sciences 2013	2 awards
Workshop on Targetry and Target Chemistry 2012	2 awards
5 th Annual Meeting of the Center for Silver Therapeutics Research	1 award
17th International Workshop on Targetry and Target Chemistry	3 awards

International Visiting Scientists Hosted

Huseyin Enginar Afyon Kocatepe University (Turkey, 2012)
 Luís Alberto Pereira Dias, Instituto de Pesquisas Energéticas e Nucleares - IPEN-CNEN/SP (Brazil, 2013)
 Juan Carlos Manrique, Nacional Autónoma de México (Mexico, 2014)
 Raquel Benedetto, Instituto de Pesquisas Energéticas e Nucleares - IPEN-CNEN/SP (Brazil, 2015 and 2017)
 Fazilet Zümrüt Biber Muftuler, Ege University, Institute of Nuclear Sciences (Turkey, 2018)
 Volkan Tekin, Ege University, Institute of Nuclear Sciences (Turkey, 2019)

GRANT SUPPORT:

Current

5P30CA013148 (Bhatia)

04/16 – 03/21

NIH

\$111,956

Comprehensive Cancer Center Core Support Grant. Small animal imaging shared facility

Project Goals: The small animal imaging resource has the goal to support molecular imaging applications for cancer, including early detection of cancer and therapy evaluation. The facility will provide detailed imaging evaluation of new cancer treatments, and thereby accelerate their translation to human trials.

Role: Co-Investigator

1R01CA200979-01 (Lapi)

09/16-08/20

NIH/NCI

\$1,345,052 total costs

Radiolabeled Antibodies Targeting LAT1 for Imaging and Therapy of Prostate Cancer

Role: PI

The overall goal of this project is to develop and evaluate radiolabeled antibody constructs selective for LAT1 as positron emission tomography (PET) and therapeutic agents that overcome the substantial limitations of currently available tracers.

1R01HD086323-01 (Garbow, Washington University)

6/15-05/20

Washington University/NIH

\$652,301

Integrated Placental Imaging: Novel Methods for Probing Function and Metabolism

Role: PI on UAB subcontract

The overall goal of this grant is to develop and validate robust, non-invasive imaging technologies for placental function assessment that will readily translate to human studies.

Last Call Foundation (Lapi)

04/19-04/20

\$50,000

Dermal Absorption Studies of Perfluorinated Alkyl Substances

Role: PI

For this project, we propose to conduct the first dermal absorption studies with ^{18}F radiofluorinated PFAS to determine how quickly specific PFAS get absorbed through the skin of healthy mice by measuring the amount of radioactivity in blood samples over time.

Mike Slive Foundation Pilot Grant in Prostate Cancer (Lapi) 01/19-01/20
\$50,000

This pilot study will investigate targeting the amino acid transporter LAT1 to treat aggressive prostate cancer.

Role: Co-PI

UAB-Radiology Research Initiative Pilot Award(Lapi) 1/18-12/19
\$20,000

Imaging with [^{89}Zr]panitumumab-PET/MRI in patients with newly diagnosed colorectal cancer

Role: PI

This pilot study will investigate the utility of PET imaging with [^{89}Zr]Panitumumab for imaging of EGFR expression in newly diagnosed colon cancer patients to assess lymph node involvement.

UAB-Faculty Development Grant (Lapi) 7/17-6/19
\$50,000

Profiling molecular markers in prostate cancer relevant to imaging and therapy

Role: PI

In this pilot grant, we will measure the presence and amounts of key molecular targets using immunohistochemistry (IHC) and binding of molecular imaging agents in human prostate cancer tissue.

Theragnostics (Lapi) 08/18-07/19
\$28,989

Preparation and delivery of SOPs and validation data for a Chemistry Manufacturing and Controls (CMC) section as part of an FDA Investigational New Drug (IND) Application.

Role: PI

Precursor kits of ^{68}Ga -THP-PSMA will be provided by Theragnostics and compounded with ^{68}Ga from an Eckert and Ziegler GalliPharm generator under sterile conditions. The CMC section will be combined with the ^{68}Ga -THP-PSMA clinical imaging protocol and submitted to the appropriate regulatory bodies within UAB. After this, the completed IND package will be prepared and submitted the FDA. Once approved, we will provide human use ^{68}Ga -THP-PSMA on a per patient basis.

ImaginAb (Lapi) 12/18-07/19
\$25,140

Preclinical Assessment of ^{177}Lu ImaginAb Protein Constructs

Role: PI

The purpose of this study is to measure the biodistribution of ^{177}Lu minibodies in BALB/C mice. Both ^{177}Lu - DTPA-IAB2MA and ^{177}Lu - DOTA-IAB2MA will be studied.

Past:

DESC0017912 (Lapi) 08/17-08/19
DOE \$299,980 total costs

Production of Radiohalogens: Bromine and Astatine for Imaging and Therapy

Role: PI

This collaborative proposal aims to research the efficient production of high purity, clinical grade radiohalogens for preclinical and translational applications by optimizing the cyclotron targetry and separation chemistry of $^{76,77}\text{Br}$ and ^{211}At for use in imaging and therapeutic experiments.

UAB-HSF (Lapi)

11/16-10/18
\$65,350

GE FASTLab 2 for the UAB Cyclotron Facility
Role: PI

The overall goal of this project is to enhance the capabilities of the UAB Cyclotron Facility. Rapid, efficient and cost-effective of short lived positron emission tomography (PET) radiopharmaceuticals is a key component of a successful clinical and translation PET program.

UAB-Radiology Research Initiative Pilot Award (Lapi)

1/18-12/18
\$20,000

Imaging with [^{89}Zr]panitumumab-PET/MRI in patients with newly diagnosed colorectal cancer
Role: PI

This pilot study will investigate the utility of PET imaging with [^{89}Zr]Panitumumab for imaging of EGFR expression in newly diagnosed colon cancer patients to assess lymph node involvement.

Navidea Biopharmaceuticals, Inc. (Lapi)

02/18-01/19
\$43,011

Development of chemistry methods and stability studies for Cu-Tilmanocept
Role: PI

During the course of this proposal, we aim to optimize and validate the chemistry required to load Tilmanocept with Cu cargo in a robust and reproducible fashion. This will include the use of a ^{64}Cu radiotracer technique to measure optimal chemistry for maximal loading, purification from unbound Cu, and stability studies of the final Cu-Tilmanocept complex.

C100212 (Lapi)

03/17-06/18
\$252,381 total costs

AbbVie Inc.
Development of a Human Use ABBV-8E12 Based PET imaging Agent for Tau
Role: PI

The overall goal of this project is the preparation and delivery of SOPs, dosimetry and validation data for an FDA Investigation New Drug (IND) Application in order to initiate clinical trials with ^{89}Zr -DFO-ABBV-8E12

AMC21 (Lapi)

7/16-6/18
\$50,000

UAB Department of Radiology
PET imaging with ^{89}Zr -Trastuzumab for prediction of HER2 targeted monotherapy effectiveness
Role: PI

Our goal is to investigate the use of ^{89}Zr -trastuzumab as a HER2 imaging agent to determine which patients are likely to respond to targeted HER2 agents as single agent therapy.

DESC0015773 (Lapi)

03/16-06/18
\$286,000 total costs

DOE
Production of the Medically Important Radionuclides ^{52}Mn and ^{90}Nb
Role: PI

This collaborative proposal will create an integrated program of radionuclide production and research activities aimed toward the efficient isolation and characterization of the medically-relevant nuclides ^{52}Mn and ^{90}Nb .

DE-SC0018900 (Lapi) 12/17-11/18
DOE \$9,000
Bursary Program for ACS radiochemistry symposium
The overall goal of this project is to obtain financial support for students, postdoctoral fellows and trainees to attend nuclear and radiochemistry-related symposia at the 2018 Spring ACS meeting in New Orleans.

DESC0015558 (Lapi) 05/16-05/18
(UAB transfer and supplement)
\$338,351 total costs

DESC0013662 (Lapi) 04/15-12/15
DOE \$230,000 total costs

Potential for Isotope Harvesting at FRIB

Role: PI

The Facility for Rare Isotope Beams (FRIB) will be a new national user facility for nuclear science, funded by the Department of Energy Office of Science (DOE-SC) Office of Nuclear Physics and operated by Michigan State University (MSU). This nuclear physics facility will generate a host of new isotopes that could be “harvested” for off-line use without affecting the users of the radioactive ion beam facility. This project is a continuation of feasibility studies to harvest useful long-lived radioisotopes from the Facility for Rare Isotope Beams (FRIB) under similar conditions available now at the National Superconducting Cyclotron Lab (NSCL).

Navidea Biopharmaceuticals, Inc. (Lapi) 02/17-05/17
\$ 28,645

Development of a Metabolite Analysis Method for (^{99m}Tc) Tilmanocept

Role: PI

In order to assess the pharmacokinetics and metabolism of [^{99m}Tc]Tilmanocept for the upcoming clinical trial “A Phase I, Open-Label Study to Investigate the Pharmacokinetics and Dosimetry of Tc 99m Tilmanocept Following a Single Intravenous Dose Administration in Male and Female Subjects Diagnosed with Rheumatoid Arthritis”, we aim to develop a method to characterize the molecular weight distribution profile of [^{99m}Tc]tilmanocept in plasma and urine.

DESC0006435 (Lapi) 10/11-6/17
DOE \$750,000 total costs

Production of ^{99m}Tc using a medical cyclotron

Role: PI

The goal of this project is to investigate to production capability of ^{99m}Tc using a small medical cyclotron. Production rates will be determined and targetry, separation and quality control procedures will be developed.

DESC0006862 (Lapi) 10/11-12/15
NNSA (sub from UCB) \$25M total costs (Lapi subaward \$900,000 total)

National Nuclear Science Consortium

Role: Principal Investigator, Washington University

The goal of this project is to provide a pipeline of nuclear educated experts to work in the fields of nuclear chemistry and physics. To this end students and postdocs will gain experience in isotope production and separation techniques which are applicable in a variety of fields.

DESC0008432 (Lapi) 09/12-12/15
DOE \$2,000,000 total costs

Training in Techniques and Translation: Novel Nuclear Medicine Imaging Agents for Oncology and Neurology

Role: PI

The goal of this proposal is to provide critical interdisciplinary research training for the next generation of radiochemists and nuclear medicine physicians. This multidisciplinary team consists of tenured and tenure-track basic science and clinical faculty who are actively involved in the development, application, and translation of radiopharmaceuticals. The research and training plans are also supported through outstanding clinical research collaborators in neurology, immunology, oncology and neurosurgery.

DESC0012737 (Dehdashti/Lapi)

10/14-12/15

DOE

\$1,000,000 total costs

Interdisciplinary Training in Translational Radiopharmaceutical Development and Nuclear Medicine Research for Oncologic, Neurologic, and Cardiovascular Imaging

Role: Co-PI

The goal of this proposal is to provide outstanding, clinically relevant translational research training for the next generation of imaging scientists and clinicians to develop, translate, and apply radiopharmaceuticals for human studies

Industry Contract (Lapi)

06/14-12/15

GSK

\$65,072 direct

PET imaging for assessment of the in vivo biodistribution and pharmacokinetics of GSK3052230

Role: PI

The goal of this project is to develop radiolabeled GSK3052230 for assessment of the biodistribution, pharmacokinetics and potential imaging attributes of this construct.

1R21CA182945-01 (Dehdashti)

01/14-12/15

A Feasibility PET Study of HER2 Receptors in Breast Cancer Using ⁸⁹Zr-Trastuzumab.

Role: Co-Investigator

The goal of this grant is to perform a pilot study with goals of demonstrating the feasibility of imaging breast cancer patients with ⁸⁹Zr-trastuzumab-PET, evaluating the relationship between tumor ⁸⁹Zr- trastuzumab uptake and in vitro status of HER2, assessing the safety of ⁸⁹Zr- trastuzumab and determining the human dosimetry of this radiopharmaceutical.

DCDC Pilot (Woodard)

11/12-11/15

(renewed in competitive renewal)

Washington University Diabetic Cardiovascular Disease Center

Role: Co-Investigator

The overall goal of this project is to investigate the use of ⁶⁴Cu-ATSM PET imaging for determination of hypoxia in atherosclerotic plaques.

HHSN268201000046 (Gropler/Brody)

08/10-07/15

NIH

\$17.8M total costs (Lapi subaward - \$260,000)

Integrated Nanosystems for Diagnosis and Therapy

Role: Co-Investigator

The central mission of this project is to develop a group of well-characterized and versatile nanoscale agents that can be assembled, labeled, targeted, filled, and activated as needed for the diagnosis and treatment of various diseases of relevance to the National Heart Lung and Blood Institute (NHLBI).

Industry Contract (Lapi)

04/14-04/15

ImaginAb \$57,754 direct

Preparation of ^{89}Zr - Df-IAB27FA for Human Use

Role: PI

The goal of this proposal is to prepare a diagnostic radiopharmaceutical based on this agent in preparation for clinical trials aimed to assess dosimetry and image quality.

DESC0007352 (Lapi/Peaslee at Hope College) 01/12-12/13

DOE \$840,000 total costs (Lapi subaward \$229,800)

Potential for Isotope Harvesting at FRIB

Role: Co-PI

The Facility for Rare Isotope Beams (FRIB) will be a new national user facility for nuclear science, funded by the Department of Energy Office of Science (DOE-SC) Office of Nuclear Physics and operated by Michigan State University (MSU). This nuclear physics facility will generate a host of new isotopes that could be "harvested" for off-line use without affecting the users of the radioactive ion beam facility. This project is a feasibility study to harvest useful long-lived radioisotopes from the Facility for Rare Isotope Beams (FRIB) under similar conditions available now at the National Superconducting Cyclotron Lab (NSCL).

DESC0008657 (Lapi) 08/12-07/14

DOE \$305,592 direct

Production of Positron Emitting Radiometals: Cu-64, Y-86, Zr-89

Role: PI

This proposal seeks support to increase our production of yttrium-86 and zirconium-89 production while continuing to produce copper-64.

1355 (Lapi) 01/12-12/14

ACRIN \$234,000 direct

ACRIN 6682 IND Agent Distribution

Role: PI

The goal of this project is to provide the radiopharmaceutical [^{64}Cu]ATSM for human use to support a clinical trial

DESC00002032 (Lapi) 09/08-8/13

DOE \$1,722,268 total costs

Integrated Research Training Program of Excellence in Radiochemistry

Role: PI

The goal of this training grant is provide a rich and deep research experience in state-of-the-art radiochemistry and in the fundamentals of radioisotopic labeling and tracer methodology to develop researchers who will be capable of meeting the challenges of designing and preparing radiotracers of broad applicability for monitoring and imaging diverse biological systems and environmental processes.

0123820001 (Lapi) 05/12-05/13

Pfizer \$48,774 direct

Preclinical Imaging of GLP-1R

Role: PI

The goal of this project is to obtain preclinical data in rats for a ^{64}Cu PET radioligand in preparation for first in human studies with a targeted therapeutic oral agent (Pfizer) to confirm GLP-1 receptor occupancy.

DESC0002114 (Lapi) 10/09-9/12

DOE \$594,000 total costs
Novel, dually radiolabeled peptides for simultaneous monitoring of enzymatic activity and protein targets
Role: Principal Investigator

DESC0004038 (Welch) 10/10-09/12
DOE \$420,000 total costs (Lapi subaward - \$124,800)
Improved Production and Separation Technologies for non-standard PET Isotopes
Role: Project 1 Principal Investigator

Glaxosmithkline (Lapi) 12/10-12/11
Corporate funding \$154,401
Title: ¹¹C-acetate imaging of response to therapy
Role: Principal Investigator

Midwest Stone Institute (Lapi) 03/10-03/11
(Role: Principal Investigator) \$50,000
Imaging Research
Title: Preclinical Molecular Imaging of Metabolic Response to Antiangiogenic Therapy in Prostate Cancer

PATENTS:

Lapi, S. Ruth, T.J., Becker, D.W. "Method and apparatus for isolating rhenium-186 for therapeutic and/or diagnostic radiopharmaceuticals." US 2008241025

Publicover, J.G., **Lapi, S.E.**, Ruth, T.J. "Method for calibrating particle beam energy" US 2007016783

BIBLIOGRAPHY:

MANUSCRIPTS:

Published Manuscripts

1. **Lapi, S.**, Ruth, T.J., Zyuzin, A., D'Auria, J.M. (2003) Development of an intense ¹⁵O radioactive ion beam using low energy protons. *Nuclear Instruments and Methods B*. 204: 444-446
2. Britto, D.T., Ruth, T.J., **Lapi, S.**, Kronzucker. H.J. (2004) Cellular and whole-plant chloride dynamics in barley: Insights into chloride-nitrogen interactions and salinity responses. *Planta*. 218: 615-622
3. Sossi, V., Buckley, K., Piccioni, P., Rahmin, A., Camborde, M., **Lapi, S.**, Ruth, T.J. (2005) Printed Sources for Positron Emission Tomography. *IEEE Nuclear Science*. 52: 114-118
4. Guo, B., Liu, W.P., Trinczek, M., **Lapi, S.**, Ames, F., Buckley, K.R., D'Auria, J.M., Jayamanna, K., Ruiz, C., Ruth, T.J. (2006) Production of intense radioactive beams using low energy protons. *High energy physics and nuclear physics (Chinese edition)*. 30: 675-679
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INVITED COMMENTARIES, REVIEWS AND BOOK CHAPTERS

1. Marquez, B.V., Zheleznyak, A., **Lapi, S.E.** (2014) Invited Perspective: Glypican-3 Targeted ⁸⁹Zirconium-PET Imaging of Hepatocellular Carcinoma: Where antibody imaging dares to tread. *Journal of Nuclear Medicine* 55(5):708-9
2. Boros, E., Marquez, B., Ikotun, O., **Lapi, S.E.**, Ferreira, C., Chapter: Radiometal Chelation in "Ligand Design in Medicinal Inorganic Chemistry" Timothy Storr ed. (2014) Wiley
3. **Lapi, S.E.**, Lewis J.S., Dehdashti F. Evaluation of Hypoxia With Copper-Labeled Diacetyl-bis(N-Methylthiosemicarbazone) (2015) *Semin Nucl Med.* 2015 Mar;45(2):177-185.
4. Marquez, B.V., **Lapi, S.E.** (2015) Invited Perspective: Pretargeted immunoPET: Overcoming limitations of space and time. *Journal of Nuclear Medicine* 57 (3) 332-33
5. Radford, L.L., **Lapi, S.E.** Methods for the Production of Radionuclides for Medicine In: Radiopharmaceutical Chemistry (Eds. Jason Lewis PhD, Brian Zeglis PhD, and A.D. Windhorst PhD). Springer 2019

INVITED ORAL PRESENTATIONS:

1. **Lapi, S.E.** (2010) Development of Zr-89, a longer lived PET radionuclide for molecular imaging. Presented at **Metals in Medicine Gordon Conference**, Andover, NH
2. **Lapi, S.E.** (2010) Opportunities for the production of medical isotopes with FRIB. Presented at the **American Chemical Society Annual Meeting**, Boston, MA
3. **Lapi, S.E.** (2010) From Antimatter to Disease Detection: The Use of Radioisotopes in the Life Sciences. Presented at **Oak Ridge National Laboratory**
4. **Lapi, S.E.** (2010) Sugar-free PET: New developments in radiometal imaging agents. Presented at **Memorial Sloan-Kettering Cancer Center**
5. **Lapi, S.E.** (2011) Radioactive Transition Metals: Cyclotron Production and Uses in Medical Imaging: Presented at **Chemistry Department, Washington University, MO**
6. **Lapi, S.E.** (2011) Imaging Applications of Radiometals. Presented at **Beckman Institute for Imaging**, University of Illinois, Urbana
7. **Lapi, S.E.** (2011) Ag-111: a radiotracer for silver chemistry and biochemistry. Presented at **Chemistry Department, University of Akron, OH**
8. **Lapi, S.E.** (2011) Imaging with Radiometals. Presented at **Society of Nuclear Medicine Annual meeting**, San Antonio, TX
9. **Lapi, S.E.** (2012) Diagnostic-Therapeutic Radioisotope Pairs. Presented at **Society of Nuclear Medicine Midwinter meeting**, Orlando, FL
10. **Lapi, S.E.** (2012) Copper-64 and Zirconium-89 PET Imaging Agents in Oncology Presented at **Chemistry Department, Missouri University, Columbia, MO**
11. **Lapi, S.E.** (2012) From Antimatter to Disease Detection, Presented at **Chemistry Department, Hope College, MI**,
12. **Lapi, S.E.** (2012) Imaging with Radiometals, The Nonstandard Isotopes become Standard. Presented at **Canadian Society of Chemistry Annual Meeting**, Calgary, AB
13. **Lapi, S.E.** (2012) PET Imaging with Radiometals, Presented at **MGH, Boston, MA**
14. **Lapi, S.E.** (2013) ImmunoPET Imaging: Where Antimatter Meets Antibodies, Presented at **Tgen, Phoenix, AZ**
15. **Lapi, S.E.** (2013) Radiochemistry Training at Washington University in St. Louis, Presented at **Chemistry Department, University of Iowa, IA**
16. **Lapi, S.E.** (2013) Production of PET Radiometals: ⁶⁴Cu and ⁸⁹Zr, Presented at **North American Particle Accelerator Conference, Pasadena, CA**
17. **Lapi, S.E.** (2013) Accelerator Production of Isotopes for Medical Use, Presented at **Oak Ridge National Laboratory, TN**
18. **Lapi, S.E.** (2014) Accelerator production of isotopes for medical use: A tale of two energies, Presented at **American Physics Society Annual Meeting, Savannah, GA**
19. **Lapi, S.E.** (2014) Radiometals for PET and SPECT: Data from the present and thoughts on the future Presented at **Turku PET Symposium, Turku Finland**

20. Lapi, S.E. (2014) Cyclotron Production and Separation of Positron Emitting Radiometals Presented at **Canadian Society of Chemistry annual meeting, Vancouver, Canada**
21. Lapi, S.E. (2014) Radiolabeled Antibodies (ImmunoPET) for Prediction of Response to Targeted Therapeutics Presented at **2014 Society of Nuclear Medicine and Molecular Imaging, St. Louis, MO**
22. Lapi, S.E. (2014) Imaging of GLP1R for Assessment of Pancreatic Beta Cell Mass Presented at **2014 Society of Nuclear Medicine and Molecular Imaging, St. Louis, MO**
23. Lapi, S.E. (2014) Cyclotron Production and Imaging Applications of Positron Emitting Radiometals Presented at **8th International Conference on Isotope**, Chicago, IL
24. Lapi, S.E. (2014) PET imaging with radiometals: Cu-64 and Zr-89 Presented at **2014 World Federation of Nuclear Medicine and Biology**, Cancun, MX
25. Lapi, S.E. (2014) Antimatter and Antibodies: PET imaging of receptor expression in oncology, Presented at **Department of Radiology, University of Wisconsin, Madison, WI**
26. Lapi, S.E. (2014) Antimatter and Antibodies: PET imaging of receptor expression in oncology, Presented at **Department of Radiology, Emory University, Atlanta, GA**
27. Lapi, S.E. (2015) Antimatter and Antibodies: PET imaging with ⁸⁹Zr in oncology Presented at **University of Pennsylvania, PA**
28. Lapi, S.E. (2015) The Supply for Key Emerging Research Isotopes: University Cyclotron Production Sites, Presented at **High Country Nuclear Medicine Meeting, Vail, CO**
29. Lapi, S.E. (2015) From Nuclear Chemistry to Nuclear Medicine: Positron Emitting Radiometals for Cancer Imaging, Presented at **Lawrence Berkeley National Laboratory, Berkeley, CA**
30. Lapi, S.E. (2015) PET imaging in Oncology with Radiolabeled Antibodies: Tools for Personalized Medicine Presented at **Society of Nuclear Medicine Missouri Valley Chapter Meeting, St. Louis, MO**
31. Lapi, S.E. (2015) Radiochemistry and PET imaging with ⁸⁹Zr: Methodology, Preclinical Analysis and Clinical Applications Presented at **IPEN, São Paulo, Brazil**
32. Lapi, S.E. (2015) Emerging PET Research Isotopes: ⁶⁴Cu, ⁸⁹Zr, ⁷⁶Br and others, Presented at **SBBN, São Paulo, Brazil**
33. Lapi, S.E. (2015) Recent developments in production and purification of novel PET isotopes **International Chemical Congress of Pacific Basin Societies**, Honolulu, Hawaii, December 15-20, 2015
34. Lapi, S.E. (2015) Potential for harvesting of long-lived radioisotopes at the Facility for Rare Isotope Beams (FRIB): Synergistic activities for basic and applied nuclear science **International Chemical Congress of Pacific Basin Societies**, Honolulu, Hawaii, December 15-20, 2015
35. Lapi, S.E. (2015) Assessment of the clearance and pharmacokinetics of silver antimicrobials using ¹¹¹Ag **International Chemical Congress of Pacific Basin Societies**, Honolulu, Hawaii, December 15-20, 2015
36. Lapi, S.E. (2016) Radiochemistry and PET Imaging with ⁸⁹Zr: Methodology, Preclinical Analysis and Clinical Applications, Presented at **APhA 2016 Annual Meeting and Exposition**, Baltimore, MD, March 4-7, 2016
37. Lapi, S.E. (2016) From Isotopes to Images: Cyclotron Production and Use of Radionuclides for Diagnostic Medicine, Presented at **The University of Illinois at Chicago**, Chicago, IL, March 31, 2016
38. Lapi, S.E. (2016) Anti-Matter and Antibodies: PET Imaging with ⁸⁹Zr in Oncology, Presented at **University of Toronto Graduate Seminar Series**, Toronto, Ontario, April 11-12, 2016
39. Lapi, S.E. (2016) From Isotopes to Images: Accelerator Production of Radionuclides for Nuclear Medicine **University of Saskatoon Chemistry Department**, Saskatoon Saskatchewan, April 29, 2016

40. **Lapi, S.E.** (2016) Accelerator Production of Isotopes, Presented at **Michigan State University, National Superconducting Cyclotron Laboratory**, Lansing, Michigan, July 21, 2016
41. **Lapi, S.E.** (2016) From Isotopes to Images, Radionuclides in Nuclear Medicine. **Presented at University of Michigan**, Ann Arbor, Michigan, Department of Radiology, July 22, 2016
42. **Lapi, SE** (2016) Proof-of-Principal Experiments for Isotope Harvesting. Presented at **Michigan State University, National Superconducting Cyclotron Laboratory**, Lansing, Michigan, August 18, 2016
43. **Lapi, SE** (2016) Isotope Production Capabilities and Radiopharmaceutical Development at the University of Alabama at Birmingham. Presented at the **International Atomic Energy Agency (IAEA)** Vienna, Austria, September 6th, 2016
44. **Lapi, SE** (2016) Mid-Scale Instrumentation in Nuclear and Radiochemistry: Needs and Opportunities. **Presented at the National Science Foundation**, Washington DC, September 29th, 2016
45. **Lapi, SE** (2016) Cyclotron Production of Radionuclides for Nuclear Medicine at Academic Centers: Little Machines with a Big Impact Division of Nuclear Physics of the American Physical Society. **Presented at the APS Division of Nuclear Physics**. Vancouver, BC. October 10-14, 2016.
46. **Lapi, SE** (2016) From Isotopes to Images: Accelerator Production of Radionuclides for Nuclear Medicine. **Presented at The University of Tennessee Knoxville**. Knoxville, Tennessee. October 24-25, 2016.
47. **Lapi, SE** (2016) Production of Radionuclides with Accelerators Big and Small: Complementary Techniques for Filling the Toolbox of Useful Radiotracers. **Presented at Oak Ridge National laboratory**. Oak Ridge, Tennessee. October 24-25, 2016.
48. **Lapi, SE.** (2017) The UAB Cyclotron Facility: Capabilities and Partnership Opportunities. **Presented at Department of Energy University Accelerator Isotope Production Workshop**. Washington, D.C. March 21-23, 2017.
49. **Lapi, SE** (2017) From Isotopes to Images: An update on the UAB cyclotron facility. **Presented at Health Physics Society**. Birmingham, AL. March 24, 2017.
50. **Lapi, SE.** (2017) From Chemistry to the Clinic: An update on the UAB cyclotron facility. **Presented at Alabama Society of Nuclear Medicine**. Orange Beach, AL. May 7. 2017.
51. **Lapi, SE.** (2017) Cyclotron Production Techniques for Novel Positron Emitters. Center for Radiopharmaceutical Sciences. **Presented at Paul Scherrer Institut**. Villigen, Switzerland. May 23, 2017.
52. **Lapi, SE.** (2017) Cyclotron Production Techniques for Novel Positron Emitters. **Presented at Albert Einstein Center for Fundamental Physics**. University of Bern, Bern, Switzerland. May 24, 2017.
53. **Lapi, SE.** (2017) ^{89}Zr Production and Radiochemistry at UAB. **Presented at IAEA**. Vienna, Austria. June 20, 2017.
54. **Lapi, SE.** (2017) Novel Radionuclides and Applications in Nuclear Medicine and Basic Science. **Presented at Karmanos Cancer Center**. Detroit, MI July 7th, 2017.
55. **Lapi, SE.** (2017) Chemistry and PET imaging with radiometals at UAB. **Presented at TRIUMF**. Vancouver, Canada July 12th, 2017.
56. **Lapi, SE.** (2017) Low Energy Accelerator Production of Isotopes for Medical Imaging. **Presented at Accelerator Applications 2017 (AccApp2017)**. Quebec City, Canada, August 1, 2017.
57. **Lapi, SE.** (2018) Production of ^{47}Sc via $\text{NatTi}(p,\alpha)$ reactions at University of Alabama at Birmingham. **Presented via Skype at International Atomic Energy Agency**. Vienna, Austria, March 5-6, 2018.

58. **Lapi, SE.** (2018) From Isotopes to Images; Applications of PET Radiometals for Nuclear Medicine. **Presented at Molecular Physiology Seminar Series.** Houston, Texas, April 16-18, 2018.
59. **Lapi, SE.** (2018) Expanding the Toolbox of PET Radioisotopes at UAB with a 24 MeV cyclotron. **Presented at Society of Nuclear Medicine and Molecular Imaging.** Philadelphia, Pennsylvania. June 22-26, 2018
60. **Lapi, SE.** (2018) Emerging PET Radiopharmaceuticals. **Presented at GE PET/MRI Users Meeting.** Philadelphia, Pennsylvania. June 27, 2018
61. **Lapi, SE.** (2018) Nuclear and Radiochemistry at the University of Alabama at Birmingham. **Presented at the 256th ACS National Meeting.** Boston, Massachusetts. August 19-23, 2018.
62. **Lapi, SE.** (2018) Production and imaging applications of radiometal PET isotopes. **Presented at the International Symposium on Molecular Imaging.** Zhuhai, China. October 25-29, 2018.
63. **Lapi, SE.** (2019) From Isotopes to Images: Radiometals for PET Imaging in Oncology. **Presented at Stanford University.** Stanford, CA. January 28-30, 2019.
64. **Lapi, S.E.** (2019) Expanding the toolbox of radiometal PET agents: Imaging applications of ^{89}Zr , ^{45}Ti and $^{43,47}\text{Sc}$. Presented at the **Massachusetts General Hospital.** Boston, Massachusetts. February 4, 2019.
65. **Lapi, SE.** (2019) From Isotopes to Images: Novel Radiometals for PET Imaging. Presented at **Texas A&M University.** College Station, TX. March 25, 2019.
66. **Lapi, SE.** (2019) Annual Assessment of the NNSA-Material Management and Minimization (M3) 99Mo Program. Presented to **Nuclear Science Advisory Committee.** Washington DC. April 8, 2019.
67. **Lapi, SE.** (2019) From Isotopes to Images: Radiometals for PET Imaging in Oncology. Biomedical Imaging Research Centre at **Western University.** London, ON, Canada. April 24, 2019.
68. **Lapi, SE.** (2019) "Radioisotope production and radiopharmaceutical development at the University of Alabama at Birmingham". Presented at the ACSI satellite workshop at the **International Symposium on Radiopharmaceutical Sciences.** May 26-31, 2019. Beijing, China.
69. **Lapi, S.E.** (2019) Creative Chemistry and Cyclotrons: Training students and expanding the toolbox of PET radionuclides. Presented at the **Canadian Association of Physicists John D'Auria Memorial Symposium.** June 4, 2019 Vancouver, Canada..

MISCELLANEOUS:

IAEA Technical Documents

1. Cyclotron Productions of Positron Emitters: ^{64}Cu and ^{124}I , (2015) International Atomic Energy Agency, Vienna, Austria 2015 available at:
<http://www-pub.iaea.org/MTCD/publications/PDF/Pub1717Web-25315812.pdf>
2. Cyclotron based Production of Technetium-99m, (2017) International Atomic Energy Agency, Vienna, Austria 2017 available at:
<http://www-pub.iaea.org/books/IAEABooks/10990/Cyclotron-Based-Production-of-Technetium-99m>