Penn NET Center – Overview of Clinical and Basic Science Research

Gastroenteropancreatic Neuroendocrine Tumors (GEP-NETs)

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Disclosures

• Consulting: Exact Sciences
• Paid travel: Janssen
• Clinical trial/study funding: Janssen, Immunovia, Epigenomics, Guardant, Freenome
PENN NET Center Overview

NETs

- Medical Oncology
- Nuclear Medicine
- Pulmonary
- Gastroenterology
- Interventional Radiology
- Medical Genetics
- Surgery
- Cardiology
- Head and Neck Surgery
- Cancer Biology
- Pathology
- Radiation Oncology
- Endocrinology
- Nephrology
Challenges associated with research in NETs

• Rarity and heterogeneity of NETs

• Few researchers compared to other fields

• Limited funding

• Limited/poor models for studying NETs in the lab
Additional challenges in NET research due to the COVID-19 pandemic

- Increased use of telehealth $\Rightarrow$ great for patient care, but difficult for research

- Workplace staffing restrictions $\Rightarrow$ less research staff on site
Overview

• Gastroenteropancreatic Neuroendocrine Tumors (GEP-NETs)
  • Database and tumor collection
  • Basic science and translational laboratory research
  • Clinical studies and trials
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Database and tumor collection

- GEP-NETs
  - Patients consented in the database
    - > 400
  - Banked blood samples
    - > 200
  - Tumor samples
    - > 100
Use of database information

Predictors of Recurrence and Survival in Patients With Surgically Resected Pancreatic Neuroendocrine Tumors

Rachel E. Rosenblum, MD,* Cynthia K. Harris, MD,* Kiwoon Joshua Baeg, BS,* Julie A. Starr, BS,† Lauren K. Brais, MPH,‡ Kristen M. Stashek, MD,§ Stephen C. Ward, MD, PhD,¶ Bryson W. Katona, MD, PhD,† Thomas E. Clancy, MD,‖ Juan P. Wisnivesky, MD, DrPh,* Matthew H. Kulke, MD,‡ David C. Metz, MBBCh,† Michelle Kang Kim, MD, PhD,§ and Jennifer A. Chan, MD, MPH‡

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Collaboration between Penn, Dana Farber, and Mount Sinai
Examined 501 patients with surgically resected pancreatic NETs
Use of tissue samples are critical for research

- Tissue sharing collaborations outside of Penn:
  Dr. Juanita Merchant (University of Arizona)
  Dr. Scott Oakes (UCSF → University of Chicago)
  Dr. Neil Renwick (Queens University)

- Tissue use within Penn:
  Dr. Xianxin Hua (Department of Cancer Biology)
  Dr. Xiaolu Yang (Department of Cancer Biology)
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Advances in NET CAR-T therapy

- Dr. Xianxin Hua’s talk will go into this in detail!
Study of NET liver metastases

- Dr. Terence Gade’s talk will go into this in more detail
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CapTem+Y90

- Treatment with combined capecitabine/temozolomide (CapTem) in combination with Y90 transarterial radioembolization
- Grade 2 NETs
CapTem+Y90

- Multicenter phase 2 trial of CapTem plus Y90 TARE for liver-dominant G2 NETS is funded and will be beginning 2021

- Recruitment goal is 55 patients
The RETNET trial is a prospective, multicenter randomized controlled trial designed to determine the optimal embolotherapy technique for NET liver metastases.
RETNET Trial

- 13 sites
- Closed to enrollment now at Penn
- Results will be coming soon
PRRT can be administered to a diverse NET population

Baseline liver function test abnormality increases the likelihood of PRRT discontinuation
Laboratory, Clinical, and Survival Outcomes Associated With Peptide Receptor Radionuclide Therapy in Patients With Gastroenteropancreatic Neuroendocrine Tumors

Sarit T. Kipnis¹, Matthew Hung², Shria Kumar³, Jason M. Heckert¹, Hwan Lee², Bonita Bennett³, Michael C. Soulen², Daniel A. Pryma², David A. Mankoff², David C. Metz³, Jennifer R. Eads⁴, Bryson W. Katona³

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Patients with diminutive and small rectal NETs (< 2cm) are at risk of metastatic disease, especially if grade 2 or grade 3.

Tumor grade is a dominant predictor of dissemination.
Goal: To determine if gallium scans can predict response to somatostatin analogs

Showed that low tumor uptake on gallium scans predicted failure of somatostatin analogs in well-differentiated GEP-NETs

Gallium scans may allow for prediction of who will not benefit from somatostatin analog use
Antiproliferative Effects of Telotristat Ethyl in Patients with Neuroendocrine Tumors: The TELEACE Real-World Chart Review Study

Michael A Morse¹
Eric Liu²
Vijay N Joish³
Lynn Huynh⁴
Mu Cheng⁴
Mei Sheng Duh¹⁴
Kiernan Seth³
Pablo Lapuerta³
David C Metz⁵

¹Duke Cancer Institute, School of Medicine, Duke University, Durham, NC, USA; ²The Neuroendocrine Institute at Rocky Mountain Cancer Centers, Denver, CO, USA; ³Lexicon Pharmaceuticals, Inc., The Woodlands, TX, USA; ⁴Analysis Group, Boston, MA, USA; ⁵Neuroendocrine Tumor Program at Penn Medicine, Philadelphia, PA, USA

- 200 patients with NETs who received telotristat ethyl for at least 6 months
- 8.5% reduction in tumor size
- Telotristat ethyl may have antitumor effects
Study aimed at exploring the somatostatin analog treatment experiences and preferences of patients with NETs

Presented as a poster at NANETS in 2020
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Thank you!

- Our patients
- Co-Directors of Penn NET Center
  - Debbie Cohen
  - David Metz
  - Jennifer Eads
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  - Bonnie Bennett
- Medical Genetics
  - Katherine Nathanson
  - Staci Kallish
  - Maria Bonanni
  - Anna Raper
  - Stephanie Asher
  - Zoe Bogus
  - Megan Lawrence
- Surgery
  - Douglas Fraker
  - Robert Roses
  - John Kucharzczuk
  - Douglas Bigelow
  - Christopher Rassekh
  - M. Sean Grady
  - Heather Wachtel
  - Major Kenneth Lee
  - Charles Vollmer
  - Thomas Guzzo
  - Frank Venuto
  - Caitlin Perch
  - Pamela Sellers
  - Jason Brant
  - Paul Foley
  - Ara Chalian
  - Kelley Culley
- Medical Oncology
  - Ursina Teitelbaum
  - Nevena Damjanov
  - Mark O’Hara
  - Kim Reiss-Binder
  - Vivek Narayan
  - Charles Schneider
  - Thomas Karasic
  - Aditi Singh
  - Kathryn Green
  - Dana Weyrick
  - Adam Fredo
  - Abigail Smith
  - Suzanne McGettigan
  - Melissa Fritz
  - Elizabeth Prechtl Dunphy
  - Gamil Hanna
  - Courtney Gabriel
  - Theodore Laetsch
  - Marcia Brose
  - Ryan Massa
- Cancer Patient Family Services
  - Heather Sheaffer
  - Doris Piccinin
  - ACC Staff and Dieticians
- Infusion Services
  - Rob Tobin
- Radiation Oncology
  - Keith Cengel
  - Michelle Alonso-Basanta
- Cancer Biology/Immunotherapy
  - Xianxin Hua
  - Carl June
  - Terence Gade
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  - Mehran Makandi
  - Ellie Mantel
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  - Yonghong Huan
  - Matthew Denker
  - Maria Bonanni
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  - Anastassia Amaro
  - Caitlin White
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  - Benita Weathers
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  - Jeffrey Mondschein
  - William Stravropoulos
  - Diana Van Houten
  - Laura Herron
  - Amanda Davis
  - Ginna Deitrick
  - Scott Trerotola
  - Deepak Sudheendra
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- Palliative Care/Pain
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  - Pain management team
- Giving
  - Christian Hyde
- Funding
  - NIH
  - NET Research Foundation
  - PheoPara Alliance
  - NANETS
  - Run for the Stripes

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