Steven K. Libutti, MD  
Rutgers Cancer Institute of New Jersey, New Brunswick, NJ

**The Role of the B7x Pathway in the Progression of NETs**
Libutti will conduct laboratory experiments to characterize the role of an immune regulator called B7x (known to be present in NETs) in stopping T-cells from recognizing and killing pancreatic NET cells that can serve as the basis for the exploration of a new immunotherapy to treat pancreatic NETs.

Itay Tirosh, PhD  
Weizmann Institute of Science, Rehovot, Israel

**Dissecting the Ecosystem of NETs by Single-Cell Genomics**
Tirosh will comprehensively characterize the cellular diversity of NETs through single-cell genomic technologies and perform extensive analyses to compare NET composition with healthy tissues and other cancer types to improve our understanding of tumor behavior.

Yotam Drier, PhD  
Hebrew University of Jerusalem, Jerusalem, Israel

**Elucidate the Developmental and Regulatory Heterogeneity of Lung Carcinoids**
Drier proposes to uncover the gene regulatory processes that drive the aberrant expression of genes responsible for the development of typical and atypical lung carcinoids.

David Raffel, PhD  
University of Michigan, Ann Arbor, MI

**Fluorine-18 Labeled MIBG Analogues for Theranostic Applications**
Raffel will assess a new PET radiotracer ([18F]3F-PHPG) to see whether it can perform significantly better than current methods (e.g. MIBG) for finding adrenal NETs.

Lynnette Fernandez-Cuesta, PhD  
International Agency for Research on Cancer (IACR-WHO), Lyon, France

**Comprehensive Molecular Characterization of Lung Supra-Carcinoids**
Fernandez-Cuesta will conduct the first molecular characterization of a new aggressive pulmonary carcinoid subtype called supra-carcinoids to identify potential drug targets for treating this disease.

Arthur S. Tischler, MD  
Tufts Medical Center, Boston, MA

**A Phenotypically Valid Model for SDHB-Mutated Paraganglioma**
This study of laboratory models aims to advance treatment of patients who inherit a risk factor for SDHB-mutated paraganglioma, an aggressive disease subtype that commonly spreads to the liver, bone, or other distant locations.
# INVESTIGATOR AWARDS, continued

## MENTORED AWARDS

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Project Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satya Das, MD</td>
<td>Vanderbilt University Medical Center, Nashville, TN</td>
<td><strong>Cabozantinib Plus CB-839: A Phase 2 Combination</strong></td>
<td>Das will combine cabozantinib and a drug called CB-839 in a phase II clinical trial to assess the synergy of these anti-tumor treatments on small intestine and pancreatic NET patients.</td>
</tr>
</tbody>
</table>

## PILOT AWARDS

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Project Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netta Mäkinen, PhD</td>
<td>Dana-Farber Cancer Institute, Boston, MA</td>
<td><strong>Studying Field Cancerization as a Cause for Multifocal Ileal NETs</strong></td>
<td>Mäkinen will explore whether field cancerization may contribute to multifocal small intestinal NETs. She theorizes that the expansion of groups of abnormal cells in normal small intestine may lead to the development of multiple independent tumors.</td>
</tr>
<tr>
<td>Claire Mulvey, MD</td>
<td>University of California, San Francisco, CA</td>
<td><strong>Trends in Incidence and Survival Outcomes for Lung NETs</strong></td>
<td>Mulvey will quantify sociodemographic and geographic patterns of incidence and overall survival among those diagnosed with lung NETs in California from 1992–2017 to identify potential risk factors.</td>
</tr>
<tr>
<td>Giovanni Vitale, MD, PhD</td>
<td>Istituto Auxologico Italiano - Istituto di Ricovero e Cura a Carattere Scientifico, Milan, Italy</td>
<td><strong>Tumor Xenografts in Zebrafish: A New in Vivo Model for Lung Carcinoids</strong></td>
<td>Vitale will develop a new laboratory model of lung NETs using zebrafish embryos to study in real time the development of the blood network that supports these tumors.</td>
</tr>
<tr>
<td>Minah Kim, PhD</td>
<td>Columbia University Medical Center, New York, NY</td>
<td><strong>Angiopoietin-2/Tie2 Signaling Regulation of Liver Metastasis in pNETs</strong></td>
<td>Kim will use a pancreatic NET mouse model to determine the significance of Angiopoietin-2(Ang2)/Tie2 signaling on liver metastasis and anti-VEGF drug efficacy.</td>
</tr>
<tr>
<td>Hans Hofland, MD, PhD</td>
<td>Erasmus MC, University Medical Center Rotterdam, Netherlands</td>
<td><strong>Mapping the Gut Microbiome in Carcinoid Syndrome</strong></td>
<td>Hofland will research the association between the gut microbiome and symptoms of carcinoid syndrome by mapping the gut microbiome of NET patients with and without carcinoid syndrome and comparing them to healthy individuals.</td>
</tr>
</tbody>
</table>