BC CANCER FOUNDATION

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FOR HELPING TO CHANGE THE OUTCOME

IMPACT REPORT | April 2022

Your generous support has enabled BC Cancer scientists Dr. Mark Carey and Dr. Cheng-Han Lee to ignite progress to break down low-grade serous ovarian cancer, piece by piece. The progress is real. We are pleased to report back on the milestones they have achieved this year.

BC CAN Break Down Low-Grade Serous Ovarian Cancer

Low-grade serous ovarian cancer (LGSOC) is a rare, aggressive cancer that affects 200 Canadian women each year.

Gynecologic Oncologist Dr. Mark Carey's laboratory at BC Cancer has established one of the largest international research programs for the study of LGSOC. Together with Oncology Pathologist Dr. Cheng-Han Lee, Dr. Carey has recently broadened his research program to include more aggressive and rare gynecologic cancers.

I. DEVELOPMENT OF EXPERIMENTAL MODELS

Dr. Carey's team has developed over 20 different cancer cell lines and four patient-derived models to better understand the molecular basis of LGSOC and identify potential drug treatment options. They have also stored approximately 150 LGSOC cases to fuel future research.

"The development of the models has led to over 20 research collaborations with colleagues in England, Austria, Australia, the Netherlands and the United States," Dr. Carey explains. It has also enabled BC Cancer's participation in the first international LGSOC research consortium, whose goals are to:

1. Establish a worldwide network of experts to promote LGSOC research;
2. Share clinical information and tissue samples to better understand outcomes and facilitate research; and
3. Promote the development of clinical trials for women with LGSOC, based on preclinical tests of the most promising drugs.

II. EXPANSION OF RESEARCH COLLABORATIONS

Dr. Carey has established an extensive network of collaborations to increase global LGSOC research. The LGSOC-CoP group, which consists of more than 20 surgeons, pathologists, oncologists, scientists and technicians, has:

- published two peer-reviewed articles;
- built the first pan-Canadian clinical registry on LGSOC;
- launched a nation-wide survey on practice patterns for LGSOC treatment; and
- standardized data-sharing agreements to facilitate LGSOC research collaborations between institutions.

Dr. Cheng-Han Lee

III. PREDICTING TREATMENT EFFICACY AND OUTCOMES

"One of our primary research goals is to identify markers expressed in LGSOC tumours that can predict a patient's outcome or effectiveness of a drug," says Dr. Carey. He has identified several molecular markers with potential clinical applications:

- **high estrogen and progesterone receptor levels** in LGSOC tumours are associated with better patient outcomes – this finding will help predicting patient progression prior to treatment, and should be considered in the design of future clinical trials;
- markers in LGSOC tumours have been found to predict response to a treatment known as **MEK inhibitors** in research models. MEK inhibitors are more effective than current chemotherapies in a subgroup of LGSOC patients and the markers may help to predict which patients will benefit. The next step is to validate these markers in clinical trials;
- **RAF inhibitors** can synergize with MEK inhibitors to increase treatment efficacy in LGSOC. "In partnership with the Netherlands Cancer Institute, we have discovered a tumour alteration which may lead to a new clinical trial," says Dr. Carey.
- **CDK4/6 inhibitors** are under evaluation for both LGSOC and breast cancer – they are now being evaluated in clinical trials for potential as a new treatment.

IV. DEVELOPING NOVEL THERAPIES FOR LGSOC

Markers on the surface of LGSOC tumour cells have been identified and are now being validated for future drug development in collaboration with UBC's TRIUMF group. "One of our top-tier candidates looks very promising as a therapeutic target and we're in the process of verifying its potential," says Dr. Carey. Based on the results, the team intends to meet with TRIUMF to discuss developing this antibody as a new treatment for LGSOC.

Dr. Mark Carey

WE WON'T STOP

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