



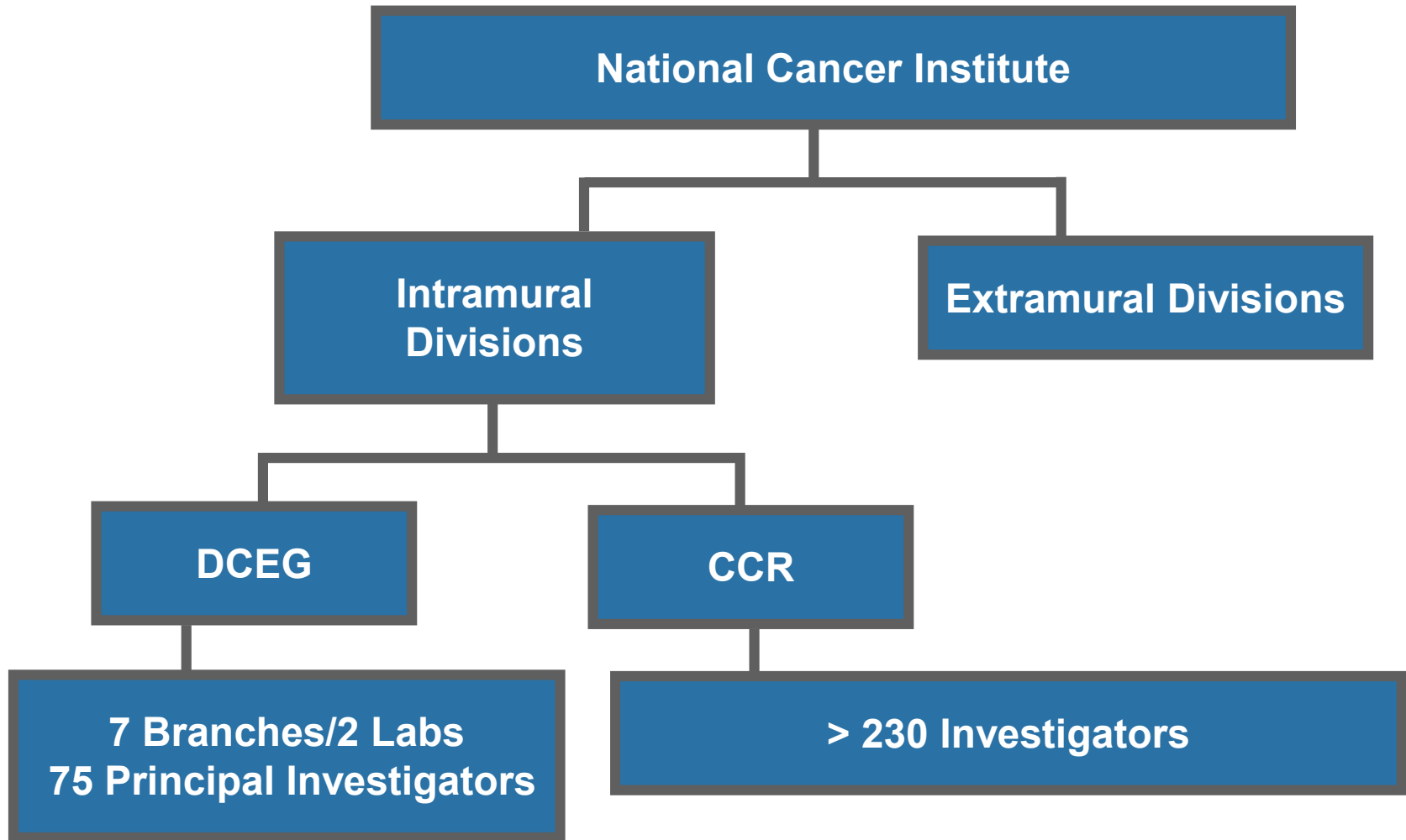
# Fellowships in the Division of Cancer Epidemiology and Genetics (DCEG)

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Chief, Office of Education



NATIONAL  
CANCER  
INSTITUTE

# DCEG at NCI



# DCEG: Mission

- National and international intramural, *population-based* research
- Studies on distribution, causes and natural history, and prevention of cancer
- Multidisciplinary, collaborative efforts
- Training of next generation of scientists in cancer epidemiology, genetics, biostatistics, and related areas

# Epidemiology Studies

GOAL: to uncover the patterns and causes of disease and study health trends in human populations.

What factors contribute to the occurrence of disease?

- *Environmental factors*
- *Dietary habits*
- *Occupational carcinogens*
- *Genetics*



# DCEG: Areas of Investigation

- Lifestyle risk factors  
(e.g., hormonal and nutritional exposures; microbiome; exercise; metabolomics)
- Environmental and occupational exposures
- Infectious agents
- Radiation
- Genetic predisposition
- Statistics and methods development; risk modeling
- Understanding mechanisms

# How We Study Disease

**Cohort Studies** – compares disease occurrence within a group with similar characteristics.

**Case-Control Studies** – compares two groups of people, those who have the disease of interest (cases) and those who do not (controls).

**Descriptive Studies** – research to characterize trends in disease incidence (occurrence) and mortality over time.



# Sources of Data

- **Exposures**

- Questionnaires
- Medical records
- Occupational records
- Molecular markers



- **Genetic Variation**

- High risk susceptibility genes
- Moderate susceptibility genes
- Common variants

# DCEG Research Continuum

## Etiology

- Tobacco
- Physical inactivity, diet, and obesity
- Infectious agents
- Radiation
- Occupational carcinogens
- Hormones
- Genetics

## Prevention

- HPV vaccine trial
- Melanoma screening
- Genetic risk prediction
- Radiation
- Nicotine addiction
- Occupational exposure dose response and threshold levels

## Implementation

- HPV screening recommendations and management guidelines
- Lung cancer screening guidelines
- Radiation protection guidelines



# DCEG Opportunities

- Summer internships
- Postbaccalaureate fellowships (bachelor and master-level)
- Graduate students (via partnerships)
- Postdoctoral fellowships
- Tenure-track investigator

# DCEG: the People



# Recent Publications by DCEG Fellows



Alcohol and oestrogen metabolites in postmenopausal women in the Women's Health Initiative Observational Study



Association between circulating levels of sex steroid hormones and esophageal adenocarcinoma in the FINBAR Study

## Statistical Methods in Medical Research

A multi-locus genetic association test for a dichotomous trait and its secondary phenotype



Serum insulin-like growth factor-I and insulin-like growth factor binding protein-3 in relation to terminal duct lobular unit involution of the normal breast in Caucasian and African American women: The Susan G. Komen Tissue Bank

## Radiology

Cataract risk in a cohort of U.S. radiologic technologists performing nuclear medicine procedures

## Clinical Cancer Research

Human papillomavirus DNA methylation as a biomarker for cervical precancer: Consistency across 12 genotypes and potential impact on management of HPV-positive women

## Cancer Epidemiology, Biomarkers & Prevention

Temporal variability of oral microbiota over 10 months and the implications for future epidemiologic studies

## American Journal of EPIDEMIOLOGY

Oral contraceptive use and risks of cancer in the NIH-AARP Diet and Health Study

## Annals of Internal Medicine®

Trends in U.S. drug overdose deaths in non-Hispanic black, Hispanic, and non-Hispanic white persons, 2000-2015

## Statistics in Medicine

Correlated Poisson models for age-period-cohort analysis

## Preventive Medicine

A prospective investigation of neighborhood socioeconomic deprivation and physical activity and sedentary behavior in older adults

## Genetic Epidemiology

Using imputed genotype data in the joint score tests for genetic association and gene-environment interactions in case-control studies

## IJC International Journal of Cancer

Joint associations of a polygenic risk score and environmental risk factors for breast cancer in the Breast Cancer Association Consortium

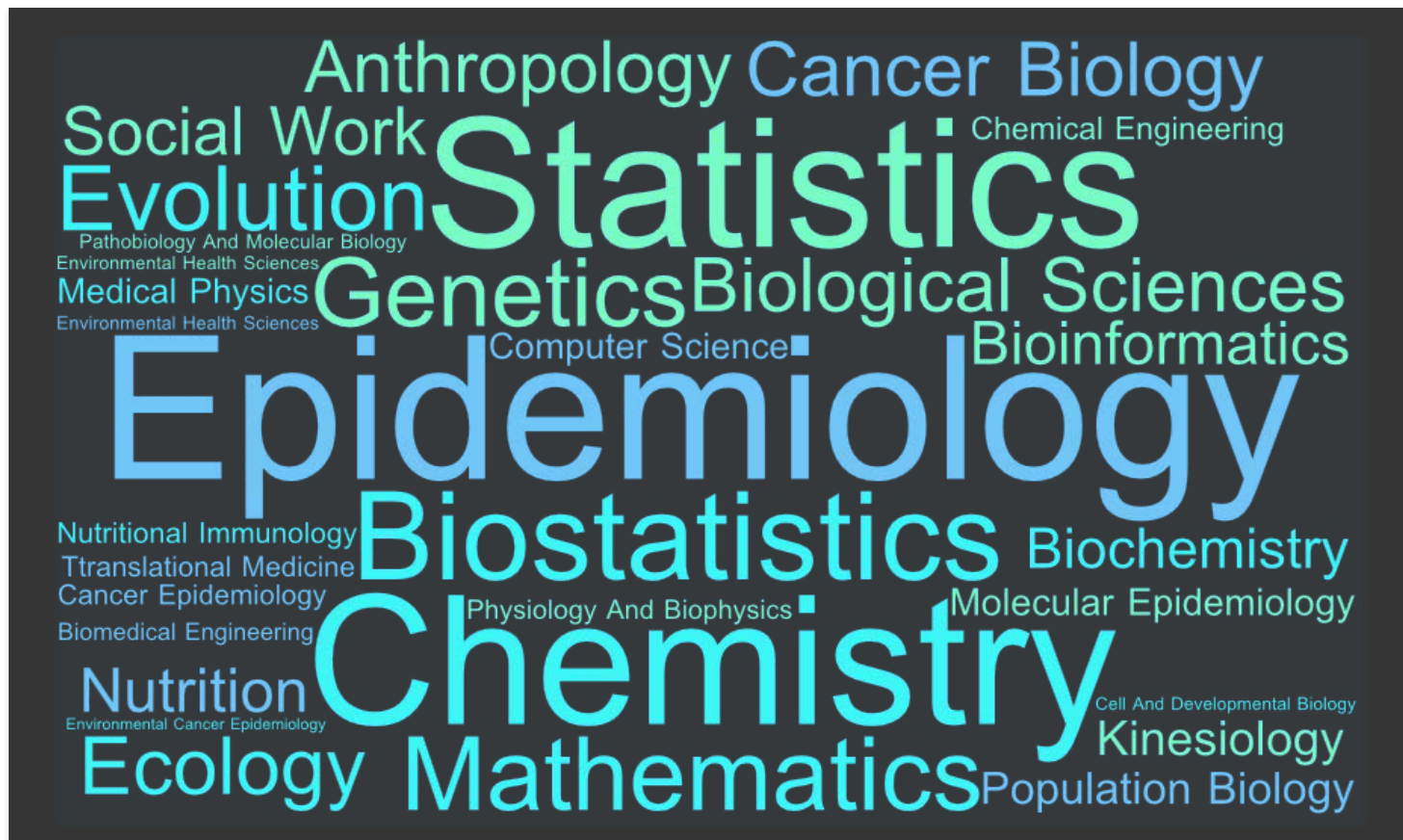
## SCIENTIFIC REPORTS

Circulating levels of inflammatory proteins and survival in patients with gallbladder cancer

## Radiation Protection Dosimetry

Piecewise polynomial approximations to the ICRP 116 effective dose coefficients: Photons and neutrons

# DCEG Fellows: Previous Training



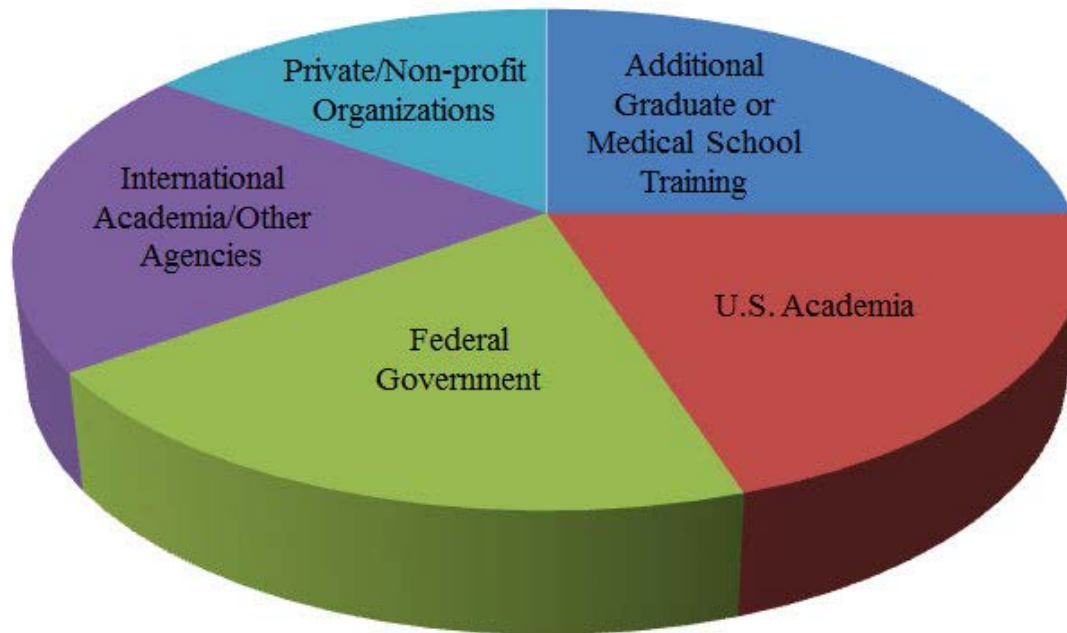
# Where DCEG Go

- Design, carry out, analyze, and publish studies
- Individual mentoring/multiple mentor models
- Build grant writing, communication and leadership skills
- Collaborate and network
- Interact with colleagues at all levels
- One-on-one job document review and interview/negotiation preparation
- Prepare for a wide-variety of careers



# Where DCEG Go

## Where DCEG Fellows Go





# For More Information

NCI-Shady Grove

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DO contact investigators directly

Apply online: <http://dceg.cancer.gov/>

- CV
- brief list of interests
- cover letter
- names of 3 references



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