

NCI Summer Curriculum in Cancer Prevention

Molecular Prevention Course

August 6 – 10, 2012

**6001 Executive Boulevard
Conference Rooms C and D
Rockville, MD 20852
301-435-1465**

Course Syllabus 2012

*U.S. Department of Health and Human Services
National Institutes of Health
National Cancer Institute
Center for Cancer Training
Cancer Prevention Fellowship Program*

NCI Summer Curriculum in Cancer Prevention

Molecular Prevention Course

Date: August 8 –12, 2012

Time: 8:30 a.m. to 10:00 a.m.
10:30 a.m. to 12:00 p.m.
1:00 p.m. to 2:30 p.m.
(Occasionally, lecture times will vary.)

Location: 6001 Executive Boulevard
Conference Rooms C and D
Rockville, MD 20852
301-435-1465

Course Director: Jessica M. Faupel-Badger, PhD, MPH, Deputy Director

Course Coordinators: Studly Auguste
Rachel Mandal

Course presented by:
Cancer Prevention Fellowship Program
Center for Cancer Training
National Cancer Institute
National Institutes of Health
David E. Nelson, MD, MPH, Director
Jessica M. Faupel-Badger, PhD, MPH, Deputy Director
Rachel J. Mandal, MSc, Public Health Analyst

EPS, Suite 150E 6120 Executive Boulevard
Bethesda, MD 20892-7105
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<http://cancer.gov/prevention/pob>
Program Staff:
Studly Auguste
Tiffany Bates
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Educational Objective for Molecular Prevention Course

The overall objective of the course is to provide specialized instruction in the principles of molecular biology as applied to the field of cancer prevention. The course focuses on the concepts, methods, issues, and applications of molecular biology in cancer prevention efforts and the genetics of cancer. Participants will have an opportunity to gain a broad-based perspective of these subject areas, including basic laboratory methodology and theory of how molecular techniques are applied to molecular epidemiology, bionutrition, chemoprevention, biomarkers, and translational research. Lifelong learning skills include critical appraisal of molecular approaches, methodologies, and theories used in the field of cancer prevention.

After attending this activity, participants will be able to: outline and apply the principles of molecular biology in cancer prevention; describe the concepts and methods of molecular biology in the field of genetics of cancer; demonstrate theoretical knowledge of basic laboratory methodology and identify techniques in the areas of molecular epidemiology, bionutrition, chemoprevention, biomarkers, and translational research; discuss the process of translating laboratory research to cancer prevention; and interpret methodologies and theories used in the field of cancer prevention.

The target audiences are MD- and PhD-degree holders who were selected into the Cancer Prevention Fellowship Program and MD- and PhD-degree holders with an interest in cancer prevention and control from the NIH and the NCI, national organizations, and foreign institutions.

If you have a disability and require any assistive devices, services, or other reasonable accommodations to participate in this activity, please contact the Cancer Prevention Fellowship Program at 301-496-8640 at least one week in advance of the lecture date to discuss your needs.

NCI Summer Curriculum in Cancer Prevention and Control

Molecular Prevention Course

Monday, August 6, 2012

8:30 a.m. – 8:45 a.m.	Introduction/Course Overview	Jessica Faupel-Badger, PhD, MPH
8:45 a.m. – 10:30 a.m.	Overview of Carcinogenesis	Norman Hord, PhD, MPH, RD
10:30 a.m. – 11:00 a.m.	Break	
11:00 a.m. – 12:30 p.m.	Molecular Epidemiology Overview	Nathaniel Rothman, MD, MPH, MHS
12:30 p.m. – 1:30 p.m.	Group Photo and Lunch	
1:30 p.m. – 3:00 p.m.	Potential of Metformin for Cancer Prevention	Brandy Heckman-Stoddard, PhD, MPH

Tuesday, August 7, 2012

8:30 a.m. – 10:00 a.m.	Application of Tissue-Based Markers in Population Studies	Jonine Figueroa, PhD, MPH
10:00 a.m. – 10:30 a.m.	Break	
10:30 a.m. – 12:00 noon	DNA Methylation Analysis of Cancers: Assessing Etiologic Heterogeneity and Early Detection	Nicolas Wentzensen, MD, PhD
12:00 noon – 1:00 p.m.	Lunch	
1:00 p.m. – 2:30 p.m.	Interweaving MicroRNA, P53, and Inflammation Networks in Human Cancer	Curtis Harris, MD

Wednesday, August 8, 2012

8:30 a.m. – 10:00 a.m.	Stem Cells and Cancer	Brid Ryan, PhD, MPH
10:00 a.m. – 10:30 a.m.	Break	
10:30 a.m. – 12:00 p.m.	EDRN and Soluble Biomarkers	Sudhir Srivastava, PhD, MPH
12:00 p.m. – 1:00 p.m.	Lunch	
1:00 p.m. – 2:30 p.m.	Public Health Genomics: From the Science of Discovery to the Science of Action	Muin J. Khoury MD, PhD

Thursday, August 9, 2012

8:30 a.m. – 10:00 a.m.	Vaccines for Prevention of HPV-Associated Cancers	John Schiller, PhD
10:00 a.m. – 10:30 a.m.	Break	
10:30 a.m. – 12:00 p.m.	Next Generation Sequencing-Application to Cancer Prevention Research	Stephen Chanock, MD
12:00 p.m. – 1:00 p.m.	Lunch	
1:00 p.m. – 2:30 p.m.	Animal Models in Cancer Control Research	David Waters, DVM, PhD

Friday, August 10, 2012

8:30 a.m. – 10:00 a.m.	Molecular Targets for Cancer Prevention	Nancy Colburn, PhD
10:00 a.m. – 10:30 a.m.	Break	
10:30 a.m. – 12:00 p.m.	Telomeres, Telomerase, and Cancer	Sharon A. Savage, MD
12:00 p.m. – 1:00 p.m.	Lunch	
1:00 p.m. – 2:30 p.m.	Biomedical Informatics for Molecular Prevention Studies	Kenneth Buetow, PhD
2:30 p.m. – 3:00 p.m.	Closing Remarks	Jessica Faupel-Badger, PhD, MPH

Faculty

Buetow, Kenneth, PhD – *Biomedical Informatics for Molecular Prevention Studies*

Director of Computational Sciences and Informatics, Complex Adaptive Systems Initiative, Full Professor, School of Life Sciences, Arizona State University College of Liberal Arts and Sciences, 1475 N. Scottsdale Road, Scottsdale, AZ 85257; 480-965-4800; kenneth.buetow@asu.edu

Chanock, Stephen, MD – *Next-Generation Sequencing-Application to Cancer Prevention Research*

Chief, Laboratory of Translational Genomics, Division of Cancer Epidemiology and Genetics, NCI, NIH, Advanced Technology Center, Room 127, 8717 Grovemont Circle, MSC 4605, Gaithersburg, MD 20877-4605; 301-435-7559; stephen.chanock@nih.gov

Colburn, Nancy, PhD – *Molecular Targets for Cancer Prevention*

Head, Gene Regulation Section, Laboratory Chief, Laboratory of Cancer Prevention, NCI, NIH, Building 576-FCRDC, Room 101, 1050 Boyles Street, Frederick, MD 21701; 301-846-1342; colburn@ncifcrf.gov

Faupel-Badger, Jessica, PhD, MPH – *Introduction/Course Overview*

Deputy Director, Cancer Prevention Fellowship Program, NCI, NIH, Executive Plaza South, Room 150E, 6120 Executive Boulevard, Bethesda, MD 20892-7361; 301-496-8640; badgerje@mail.nih.gov

Figuroa, Jonine, PhD, MPH – *Application of Tissue-Based Markers in Population Studies*

Investigator, Hormonal and Reproductive Epidemiology Branch, Division of Cancer Epidemiology and Genetics, NCI, NIH, Executive Plaza South, Room 5104, 6120 Executive Boulevard, MSC 7234, Bethesda, MD 20892-7234; 301-402-3654; figueroaj@mail.nih.gov

Harris, Curtis, MD – *Interweaving MicroRNA, P53, and Inflammation Networks in Human Cancer*

Head, Molecular Genetics and Carcinogenesis Section, Laboratory Chief, Laboratory of Human Carcinogenesis, Center for Cancer Research, NCI, NIH, Building 37, Room 306BA, 37 Convent Drive, MSC 4258, Bethesda, MD 20892-4258; 301-496-2048; curtis.harris@nih.gov

Heckman-Stoddard, Brandy – *Potential of Metformin for Cancer Prevention*

Program Director, Breast and Gynecologic Cancer Research Group, Division of Cancer Prevention, NCI, NIH, Executive Plaza North, Room 2129, 6130 Executive Boulevard, MSC 7333, Bethesda, MD 20892-7333; 301-594-0696; heckmanbm@mail.nih.gov

Hord, Norman, PhD, MPH, RD – *Overview of Carcinogenesis*

Associate Professor, School of Biological and Population Health Sciences, College of Public Health and Human Sciences, Oregon State University, 110 Milam Hall, Corvallis, OR 97331; 541-737-5923; norman.hord@oregonstate.edu

Khoury, Muin J., MD, PhD – *Public Health Genomics: From the Science of Discovery to the Science of Action*

Director, National Office of Public Health Genomics, Centers for Disease Control and Prevention, Acting Director of Epidemiology and Genomics Research Program, NCI/NIH, 1600 Clifton Road, Atlanta, GA 30333; muk1@cdc.gov

Rothman, Nathaniel, MD, MPH, MHS – *Molecular Epidemiology Overview*

Head of Molecular Studies, Senior Investigator, Division of Cancer Epidemiology and Genetics, NCI, NIH, Executive Plaza South, Room 8116, 6120 Executive Boulevard, MSC 7182, Bethesda, MD 20892-7182; 301-496-9093; rothmann@mail.nih.gov

Ryan, Brid, PhD, MPH – *Stem Cells and Cancer*

Research Fellow, Laboratory of Human Carcinogenesis, Center for Cancer Research, NCI, NIH, Building 37, Room 3060, MSC 4258, 37 Convent Drive, Bethesda, MD 20892-4258; 301-496-5886; brid.ryan@nih.gov

Savage, Sharon A., MD – *Telomeres, Telomerase, and Cancer*

Investigator, Division of Cancer Epidemiology and Genetics, NCI, NIH, Executive Plaza South, Room 7018, 6120 Executive Boulevard, Bethesda, MD 20892; savagesh@mail.nih.gov

Schiller, John, PhD – *Vaccines for Prevention of HPV-Associated Cancers*

Head, Neoplastic Disease Section, Deputy Laboratory Chief, Laboratory of Cellular Oncology, Center for Cancer Research, NCI, NIH, Building 37, Room 4106, 37 Convent Drive, MSC 4262, Bethesda, MD 20892-4262; 301-594-2715; schillej@mail.nih.gov

Srivastava, Sudhir, PhD, MPH – *EDRN and Soluble Biomarkers*

Chief, Cancer Biomarkers Research Group, Division of Cancer Prevention, NCI, NIH, Executive Plaza North, Room 3142, 6130 Executive Boulevard, Bethesda, MD 20892; 301-496-3983; srivasts@mail.nih.gov

Waters, David, DVM, PhD – *Animal Models in Cancer Control Research*

Professor of Comparative Oncology, Department of Veterinary Clinical Sciences and Associate Director, Center on Aging and the Life Course, Purdue University; Director, Center for Exceptional Longevity Studies, Gerald P. Murphy Cancer Foundation, 3000 Kent Avenue, Suite E2-100, West Lafayette, IN 47906; waters@purdue.edu

Wentzensen, Nicolas, MD, PhD – *DNA Methylation Analysis of Cancers: Assessing Etiologic Heterogeneity and Early Detection*

Investigator, Hormonal and Reproductive Epidemiology Branch, Division of Cancer Epidemiology and Genetics, NCI, NIH, Executive Plaza South, Room 5024, 6120 Executive Boulevard, MSC 7234, Bethesda, MD 20892-7234; 301-435-3975; wentzenn@mail.nih.gov