

SOC GEN 180: Contemporary Metabolism at the Intersection of Nutrition, Data, and Society

Quarter: Fall 2015

Location: HUMANITIES A26

Time: Monday/Wednesday 2:00-3:30pm

Instructor: Dr Nadine Levin

Office: LSB 3323A

Office Hours: Mondays
4:00-5:00pm

Email: nlevin@socgen.ucla.edu (I will only answer emails during working hours!)

Course Website: <https://ccle.ucla.edu/course/view/15F-SOCGEN180-1>

Catalogue Description

What is metabolism? How does metabolism affect health? How is our understanding of metabolism shaped by society and science? This class provides a broad introduction to contemporary nutritional issues, exploring the intersections between metabolic research and changes health issues in society. This class examines how metabolic research is influenced by globalization, changing nutritional patterns, the rise of big data, and science policy; and consequently how this affects the diagnosis and treatment of disease. Topics covered include metabolism in relation to chronic diseases like obesity and cancer, personalized medicine, post-genomic science, and the microbiome. Theoretically, this class explores how metabolic research is shaped by data and statistics, cultures and politics of science, scientific objectivity, and complexity theory.

Course Overview and Structure

This course meets twice a week on Monday and Wednesday afternoons for 90 minutes per session (despite what the course website says!) For the most part, Mondays will be lectures, and Wednesdays will be discussion based. The classes will consist of a mixture of lecture and discussion, to introduce topics and explore key course concepts. The syllabus lists the main week's topic, along with individual topics for each lecture/discussion.

There is no textbook assigned for this course – the texts come from a combination of journal articles and popular media articles, and will require careful and critical reading. All texts will be made available on the course website. The most important course requirement is that you do the reading regularly, in advance of class, and pay close attention to it. The lectures and discussions do not repeat the content of the reading, but rather are designed to enhance your understanding of the issues raised in or by the texts.

Due dates for assignments are indicated on the syllabus.

Course Goals

In this course, students will learn to:

- Understand why it is important to talk about, think about, and critically examine metabolism in contemporary society
- Think critically about what “metabolism” *is*, from both a biological and sociocultural perspective, i.e. from a broader perspective than classical biochemistry provides

- Grasp the complex relationship between metabolism and health, i.e. (1) how metabolism contributes to health and disease, and (2) how contemporary health issues affect research on and concepts of metabolism
- Examine how metabolism is portrayed in the popular media, and question the assumptions/implications embedded within popular science

Grading and Late Policy

Participation	25%
Weekly Reading Responses	15%
Group Presentation	10%
Op-Ed	20%
Film Reading Response	10%
Final Paper	20%

All assignments are due in class in hard copy form. Late papers or assignments lose a grade increment per day. That means an A paper that is a day late will become an A- paper after the end of class, then a B+ paper the next day, etc. Excuses will not be tolerated unless they pertain to medical emergencies. I will attempt to hand back all assignments within one week. All work for the class must be completed to earn a passing grade. Students will be provided a class participation grade at the halfway point of the course.

Attendance and Participation

Although this course is officially a lecture, it still requires extensive reading, thought, and participation. It is essential that all students come to class ready to engage with the material – I make a habit of calling on students whether or not they have their hands up and look ready to participate. Your opinions, questions and commentary are always welcome as long as you are respectful of other students and myself. To get full credit for participation, students are expected to attend all classes and participate actively in class discussion. Arriving late or leaving early will affect a student’s grade if it happens more than once. If you need to miss a class for any reason, please contact me as soon as possible to make arrangements.

The most important aspect of this course is to complete all of the assigned reading by each class, and to do so carefully and critically. Comprehension of the arguments in these texts is essential to your success in this course. Students are expected to read actively (for example to look up terms and ideas that are not clear from the texts), to comprehend the authors’ arguments, and to come to class prepared to discuss the ideas in the reading and your reactions to them. Students are expected to bring a copy of the reading, along with a list of comments, questions, confusions, objections, or other well-informed reactions, to each class.

Weekly Readings and Responses

Each week, you will be required to post a public reading response on the course website, consisting of 250 words (and no more than 500 words). These responses are to be posted on the course website no later than Wednesday 8am, in advance Wednesday’s class. This response will entail your thoughts on the week’s readings/topic, and should build on the themes/concepts covered in the week’s readings. Reading responses should demonstrate your understanding of the reading, but should be a space to voice your own thoughts/opinions on the topic. You should think of these readings responses as a space to jot down any ideas you want to bring up in the class discussion on Wednesday.

Graded Assignments

Group Presentation – Reading Response

Each student will be responsible, with his/her group, for preparing one 10-minute presentation to the class, and for leading an ensuing 15 minutes of class discussion. For the presentation, student groups will select a topic in the popular media that speaks to the course's weekly theme. Students will select several articles from prominent journals/newspapers such as *The New York Times*, *The Washington Post*, *Nature*, *Science*, *Scientific American*, *The Economist*, and will spend 5 minutes summarizing key concepts/arguments, and 5 minutes discussing how they relate to the week's lecture/discussion. As an example, students assigned to the week on the microbiome may wish to discuss recent scientific studies or clinical trials, while students assigned to the week on the quantified self may wish to discuss the rise of smart watches or fitness trackers.

Midterm: Op-Ed

For the Op-Ed, students will write a 750 word essay to explore how some aspect of research on metabolic disorder (as discussed in the first three weeks of class) comes to bear on an important social problem. Although op-eds come in many forms, the best ones share several key features: (1) they identify a specific puzzle (Why are U.S. obesity rates increasing?), (2) they examine the problem in light of current scientific thinking (theory) and evidence (research findings), and (3) they communicate some novel insight about the nature of the problem or propose a solution based on available evidence. Students are required to use three or more external sources beyond course readings to support their arguments. More information about this assignment will be provided in the form of a handout.

Film Reading Response

For the film reading response, students should use the following prompt to write a two page double spaced/500 word review of the film: how/why does genomics provide a limited view of the metabolic basis of health and disease? The reading response should also include a (short!) summary of the film's main arguments, as well as an evaluation of what worked well/did not work in the film.

Final Paper: "Find your favorite metabolite."

For the final paper, students will select a metabolite to form the basis of a six page double spaces/1500 word essay. Students should select a metabolite that is involved in some aspect of human metabolism, and should explore the social implications of research on this metabolite. The paper should be equal parts biology and social science, and should explore the science surrounding the metabolite, as well as its relationship to core topics covered in class such as precision medicine, the microbiome, etc. Overall, students should use their "favorite" metabolite as a way to discuss the broader implications of biomedical research for contemporary society. You will be expected to give a very brief presentation of your paper's topic to the class on the final day of the course.

A ½ page outline will be due in Week 6 – you should think of this as an opportunity to get feedback from me about your topic. This outline will not be graded, but will count towards your participation grade. More information about this assignment will be provided in the form of a handout.

Plagiarism and Other Annoying Things

Each student in this course is expected to abide by the University policies for academic integrity and plagiarism. Any breach of this code will be taken seriously: if I find you cheating, the Dean of Students

will make you write a humiliating letter apologizing to everyone involved, and you will probably fail the course. Don't do it. For basic guidelines:

- Any work submitted by a student in this course for academic credit must be the student's own work. Papers and essays should be regarded as assignments to individuals and must not be prepared by groups.
- Full citations are expected for all quoted and paraphrased material, regardless of source. All sources of ideas must be properly cited. When in doubt, cite.

The in-class use of any technological devices is discouraged (yes, that means cell phones, computers, tablets, etc.). The use of computers for any other purposes than taking notes is prohibited – if you are caught using a computer to check email or social media, you will receive a zero for participation for the course.

Study Disabilities

Students needing an academic accommodation based on a disability should contact the Office for Students with Disabilities (OSD) located at (310) 825-1501 or A255 Murphy Hall. When possible, students should contact the OSD within the first two weeks of the term as reasonable notice is needed to coordinate accommodations. For more information visit www.osd.ucla.edu.

Readings and Schedule

Week 1: What is “Metabolism”?

Monday September 28

Readings:

Introduction

- None

Wednesday September 30

Readings:

Discussion: Metabolism in historical perspective

- **Chapter 6** “Making more out of meat” in Spary, E. C. (2014). *Feeding France: New Sciences of Food, 1760–1815*, Cambridge University Press.
- **Pages 21-29** of Nestle (2014). “Why Calories Count”, University of California Press

Optional:

- Landecker, H. (2013). "Postindustrial Metabolism: Fat Knowledge." *Public Culture* 25(3 71): 495-522.
- **Pages 170-74** of: Landecker, H. (2011). "Food as exposure: Nutritional epigenetics and the new metabolism." *BioSocieties* 6(2): 167-194.

Week 2: Metabolism, Food, and Health

Monday October 5

Readings:

Lecture: Nutritional disorders in global perspective

- Popkin, B. M. and P. Gordon-Larsen (2004). "The nutrition transition: worldwide obesity dynamics and their determinants." *International journal of obesity* 28: S2-S9.
- Hawkes, C. (2006). "Uneven dietary development: linking the policies and processes of globalization with the nutrition transition, obesity and diet-related chronic diseases." *Globalization and health* 2(1): 4.
- [New York Times \(July 24 2015\) Americans are finally eating less](#)
- [New York Times: It's hard to count calories, even for researchers](#)

Optional:

- Swinburn, B. A., G. Sacks, K. D. Hall, K. McPherson, D. T. Finegood, M. L. Moodie and S. L. Gortmaker (2011). "The global obesity pandemic: shaped by global drivers and local environments." *The Lancet* 378(9793): 804-814.

- Drewnowski, A., C. D. Rehm and D. Solet (2007). "Disparities in obesity rates: analysis by ZIP code area." *Social science & medicine* 65(12): 2458-2463.

Readings:

Wednesday October 7

Discussion: Why is the world overweight?

- Selected essays from [Limn Issue Number Four: Food Infrastructures](#)

Optional:

- Gewertz, D. and F. Errington (2007). "The Alimentary Forms of the Global Life: The Pacific Island Trade in Lamb and Mutton Flaps." *American Anthropologist* 109(3): 496-508.

Week 3: Metabolic Disorder

Monday October 12

Lecture Topic: What is "healthy" metabolism?

Readings:

- Després, J.-P. and I. Lemieux (2006). "Abdominal obesity and metabolic syndrome." *Nature* 444(7121): 881-887.
- [The Guardian: Are you a Tofi? \(That's thin on the outside, fat inside\)](#)
- [New York Times: Same BMI, very different beach body](#)

Optional:

- Eckel, R. H., S. M. Grundy and P. Z. Zimmet (2005). "The metabolic syndrome." *The Lancet* 365(9468): 1415-1428.

Wednesday October 14

Discussion Topic: How should we address obesity?

Readings:

- [Michael Pollan \(January 28 2007\) Unhappy Meals](#)
- [Julie Guthman \(January/February 2008\) The Food Police, Why Michael Pollan makes me want to eat Cheetos](#)
- Casazza, K., K. R. Fontaine, A. Astrup, L. L. Birch, A. W. Brown, M. M. Bohan Brown, N. Durant, G. Dutton, E. M. Foster and S. B. Heymsfield (2013). "Myths, presumptions, and facts about obesity." *New England Journal of Medicine* 368(5): 446-454.

Optional:

- [Emily Yates-Doerr \(April 17 2011\) Complex Carbohydrates: On the relevance of ethnography in nutrition education](#)

Week 4: Nutrition in the Age of the Genome

Monday October 19

Readings:

Lecture: Epigenetics and nutrition

**ASSIGNMENT DUE:
OP-ED**

- Pearson, H. (2011). "Epidemiology: Study of a lifetime." *Nature* 471: 20-24.
- Ahmed, F. (2010). "Epigenetics: Tales of adversity." *Nature* 468(7327): S20-S20.
- Shetty, P. (2012). "Public health: India's diabetes time bomb." *Nature* 485(7398): S14-S16.
- Landecker, H. and A. Panofsky (2013). "From social structure to gene regulation, and back: a critical introduction to environmental epigenetics for sociology." *Annual Review of Sociology* 39: 333-357.

Wednesday October 21

Readings:

Discussion: the social implications of epigenetics

- Richardson, S. S., C. R. Daniels, M. W. Gillman, J. Golden, R. Kukla, C. Kuzawa and J. Rich-Edwards (2014). "Society: Don't blame the mothers." *Nature* 512: 131-132.
- Lock, M. (2015). "Comprehending the Body in the Era of the Epigenome." *Current Anthropology* 56(2): 151-177.

Optional:

- Landecker, H. (2011). "Food as exposure: Nutritional epigenetics and the new metabolism." *BioSocieties* 6(2): 167-194.
- Niewöhner, J. (2011). "Epigenetics: Embedded Bodies and the Molecularisation of Biography and Milieu." *BioSocieties* 6(3): 279-298.

Week 5: Molecular Metabolism

Monday October 26

Readings:

Lecture: The molecular study of metabolism

- Blow, N. (2008). "Metabolomics: Biochemistry's new look." *Nature* 455(7213): 697-700.
- Nicholson, J. K. and J. C. Lindon (2008). "Systems biology: Metabonomics." *Nature* 455(7216): 1054-1056.
- Pearson, H. (2007). "Meet the human metabolome." *Nature* 446(7131): 8-8.
- Nicholson, J. K., E. Holmes, J. M. Kinross, A. W. Darzi, Z. Takats and J. C. Lindon (2012). "Metabolic Phenotyping in Clinical and Surgical Environments." *Nature* 491(7424): 384-392.

Wednesday October 28

Readings:

Discussion: Data challenges in metabolomics

- *To be assigned*

Week 6: The Microbiome and Human Health

Monday November 2

Guest Lecture – Dr William DePaolo, USC Keck School of Medicine

Readings (subject to change):

- Hvistendahl, M. (2012). "My microbiome and me." *Science* 336(6086): 1248-1250.
- [Huffpost \(June 12 2015\) Why Your Gut Microbiome Could Hold the Key to Solving the Obesity Epidemic](#)
- [New York Times \(July 14 2014\) We Are Our Bacteria](#)
- [Science Magazine \(March 27 2013\) Our Microbes May Slim Us Down](#)

Optional:

- [Science Magazine Special Section on the Gut Microbiome](#)
- Turnbaugh, P. J., R. E. Ley, M. A. Mahowald, V. Magrini, E. R. Mardis and J. I. Gordon (2006). "An obesity-associated gut microbiome with increased capacity for energy harvest." *nature* 444(7122): 1027-1131.
- Gordon, J. I. (2012). "Honor thy gut symbionts redux." *Science* 336(6086): 1251-1253.

Wednesday November 4

Discussion: Is there a "healthy" microbiome?

**ASSIGNMENT DUE:
FINAL PAPER OUTLINE**

Readings:

- Benezra, A., J. DeStefano and J. I. Gordon (2012). "Anthropology of microbes." *PNAS* 109(1): 6378-6381.
- [Michael Pollan \(May 15 2013\) Some of My Best Friends Are Germs](#)
- [New York Times: There is no 'healthy' microbiome](#)

Optional:

- Hanage, W. P. (2014). "Microbiome science needs a healthy dose of scepticism." *Nature* 512(7514): 247-248.
- Paxson, H. and S. Helmreich (2014). "The perils and promises of microbial abundance: Novel natures and model ecosystems, from artisanal cheese to alien seas." *Social studies of science* 44(2): 165-193.

Week 7: Metabolism of Populations

Monday November 9

Lecture/Discussion: molecular

Readings:

- Holmes, E., R. L. Loo, J. Stamler and M. Bictash (2008).

epidemiology

"Human Metabolic Phenotype Diversity and Its Association with Diet and Blood Pressure." *Nature* 453: 396-400.

- [Chemistry World \(February 15 2013\) Phenome Centre goes for gold](#)
- [Analytical Scientist, Our Phenome Future \(pages 29-31\)](#)
- Bauer, S. (2013). "Modeling Population Health." *Medical anthropology quarterly* 27(4): 510-530.

Optional:

- Dauchet, L., P. Amouyel and J. Dallongeville (2009). "Fruits, vegetables and coronary heart disease." *Nature Reviews Cardiology* 6(9): 599-608.
- Bictash, M., T. M. Ebbels, Q. Chan and R. L. Loo (2010). "Opening up the "Black Box": Metabolic Phenotyping and Metabolome-Wide Association Studies in Epidemiology." *Journal of Clinical Epidemiology* 63(9): 970-979.

Wednesday November 11

NO CLASS (VETERAN'S DAY)

- Watch video on your own time: [BBC Horizon, Miracle Cure A Decade of the Human Genome](#)

Week 8: Metabolism of Individuals

Monday November 16

Lecture: Personalized medicine/nutrition

Readings:

- Mirnezami, R., J. Nicholson and A. Darzi (2012). "Preparing for Precision Medicine." *New England Journal of Medicine* 366(6): 489-491.
- Whitcomb, D. C. (2012). "What is personalized medicine and what should it replace?" *Nature Reviews Gastroenterology and Hepatology* 9(7): 418-424.
- [Tech Republic \(January 30 2015\) Why your urine could usher in an era of personalized medicine](#)

Optional:

- National Academy of Sciences (2011). *Toward Precision Medicine: Building a Knowledge Network for Biomedical Research and a New Taxonomy of Disease*. Washington DC, National Academy of Sciences.

Wednesday November 18

Discussion: Who Benefits from Personalized Medicine?

**ASSIGNMENT DUE:
FILM READING RESPONSE**

Readings:

- Tutton, R. (2012). "Personalizing Medicine: Futures Present and Past." *Social Science & Medicine* 75: 1721-1728.
- Plus any two of the following:

- [New York Times \(January 25 2015\) Moonshot Medicine will let us down](#)
- [New Yorker \(February 5 2015\)The Problem with Precision Medicine](#)
- [New York Times \(February 16 2015\) Genes Tell Only Part of the Story](#)
- Rubin, R. (2015). "Precision medicine: the future or simply politics?" JAMA 313(11): 1089-1091.
- [Forbes \(March 25 2015\) What Angelina Jole's Personal Medicine Tells us about Personalized Medicine](#)

Optional:

- Horwitz, R. I., M. R. Cullen, J. Abell and J. B. Christian (2013). "(De) personalized medicine." Science 339(6124): 1155-1156.

Week 9: The Quantified Self Movement

Monday November 23

Readings:

Lecture: Tracking individual metabolism

- Frood, A. (2010). "Technology: a flavour of the future." Nature 468(7327): S21-S22.
- [The Atlantic \(December 26 2014\) Is 2015 the Year We All Sequence Our Microbiomes?](#)
- Lupton, D. (2015). "Health promotion in the digital era: A critical commentary." Health promotion international 30(1): 174-183.

Wednesday November 25

Readings:

NO CLASS
(THANKSGIVING HOLIDAY)

- None

Week 10: Metabolism in Broader Perspective

Monday November 30

Readings:

Lecture: Metabolism and food

- *To be assigned*

Wednesday December 2

Readings:

Concluding Thoughts

- *None*

**ASSIGNMENT: FINAL ESSAY
DUE**

