

PAPER JUSTIFICATION

This is an interesting paper for medical and graduate students because it examines the correlation between stress (as we typically experience it) and cellular aging. Perhaps freaking out about that final is causing decreased telomerase function and increased aging in your own cells!

This paper entails a few straightforward, correlation experiments that link chronic stress in women caring for chronically ill children with higher oxidative stress, reduced telomerase activity and shorter telomeres in their peripheral blood cells.

Scientists know a lot about the effect of "cellular stresses" on the senescence pathway. What we don't know as much about is the connection between good-old everyday stress and the health of our cells. I view this paper as a great justification for the pass/fail grading system we enjoy at Stanford med!

CITATION AND ABSTRACT

Proc Natl Acad Sci U S A. 2004 Dec 7;101(49):17312-5. Epub 2004 Dec 1.

Accelerated telomere shortening in response to life stress.

Epel ES, Blackburn EH, Lin J, Dhabhar FS, Adler NE, Morrow JD, Cawthon RM.

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Numerous studies demonstrate links between chronic stress and indices of poor health, including risk factors for cardiovascular disease and poorer immune function. Nevertheless, the exact mechanisms of how stress gets "under the skin" remain elusive. We investigated the hypothesis that stress impacts health by modulating the rate of cellular aging. Here we provide evidence that psychological stress--both perceived stress and chronicity of stress--is significantly associated with higher oxidative stress, lower telomerase activity, and shorter telomere length, which are known determinants of cell senescence and longevity, in peripheral blood mononuclear cells from healthy premenopausal women. Women with the highest levels of perceived stress have telomeres shorter on average by the equivalent of at least one decade of additional aging compared to low stress women. These findings have implications for understanding how, at the cellular level, stress may promote earlier onset of age-related diseases.

To: harbury@pmgm2.Stanford.EDU
Subject: Paper nominations for Biochem230
Cc: hedjasi@pmgm2.Stanford.EDU

Dear students,

This is a reminder that everyone needs to nominate a discussion paper for the final week of class by next Monday, Nov. 14. Please send your nominations to the course administrator Kathryn Hedjasi at hedjasi@cmgm.stanford.edu.

For your nomination, please provide the paper's complete citation and abstract, as well as a brief paragraph stating why you think this paper is important and would be good to discuss as a group. If you can also provide a .pdf or web link to the complete paper, that would be helpful.

Please offer your favorite, most interesting papers that are related to any aspect of the very general topic "Molecular Interventions in Human Disease." The papers may be recent or classic, but must be drawn from the primary clinical or scientific literature, and published by or in press at a peer-reviewed journal (review articles and submitted manuscripts are not appropriate). You may nominate a second paper if you find two such great ones that you cannot decide. Pehr and I will lead the discussions for the student-nominated papers, so having your paper chosen will not entail extra work (although you are welcome to volunteer to lead the discussion for your paper if you want to).

Kathryn will post the nominations on the course web site at

<http://biochem.stanford.edu/biochem230/nominations2005.html>

Please look over the nominations during the week of Nov. 14. Votes should be e-mailed to me at theriot@stanford.edu. Votes will be tallied at 8 am on Friday, Nov. 18, and the papers will be announced at class that day.

Voting method: We will have (at least) twenty-two nominated papers and twenty-four voters (Pehr and I also get to vote). I have surveyed a variety of proportional voting strategies for multi-party parliamentary democracies and have settled on the following as being the most fair: Every individual is permitted ten votes. The votes may be apportioned in any manner you see fit. If it is extremely important to you to discuss one particular paper, you may cast all of your votes for that paper. If you have ten that you like but consider them all roughly equally, you may cast one vote per. Two that you love, and two others in the running, cast four votes each for your favorite two, and one vote each for the others. Etc., with no restrictions except that votes may not be subdivided beyond the quantal unit. My hope is that this approach will ensure a reasonable balance of breadth and depth of participant interest in the papers that we discuss.

I look forward to seeing your choices.

Cheers,

Julie.

Margie Teng
Stanford Medical School, Year I

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