Measures of Success and How to Attain Them

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Why “measure” success?

- To fulfill promotion requirements
- To objectively compare yourself to others in your field
- Personal satisfaction
Generally accepted scholarship metrics

- Number of grants
- Number and type of publications
- Impact factor of journals in which you publish
- Number of times your papers are cited
- H-index
Grants

• Ability to acquire external funding for your work is considered an indication of your creativity and standing in the field

• Career development awards (K-awards, VA CDA awards) are highly valued, in part because recipients historically have a higher likelihood of future success
Typical Career Progression for Grants Acquisition

- Internal funding (seed grant, URC, ACTSI)
- Career development award (K-award, CDA, SDG), or foundation award (AHA, Crohn’s Foundation, ADA)
- R21, R03 or small foundation grant
- Industry funding if applicable
- R01, followed by second R01 or renewal

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What Universities Look For on New Hires...

- Ability to compete for funding
- K- or other CDA award, especially K99/R00 mechanism
Publications

- Universities and colleagues keep track of:
  - Number of original articles in refereed journals
  - Review articles
  - Symposium contributions
  - Book chapters
  - Books edited and written
  - Other (case reports, non-peer-reviewed publications, abstracts)

- Not all publications are created equal
  - Peer reviewed or not
  - Impact factor of journal

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How to start your publication list

- Work with senior mentor on book chapters, reviews
- Write and present abstracts, case reports
- Start with a small study; graduate to more time consuming ones
Journal Impact Factors

• Created in 1960’s by Thomson Reuter
• Measure of the frequency with which an average article has been cited
• Calculated by dividing the number of current year citations into the source items published in that journal during the previous two years
• Some universities ask you to list impact factor on cv for each publication
• The higher the impact factor, the more prestigious the journal
### Examples of Impact Factor

- **NEJM** 53.2
- **Lancet** 38.3
- **Nature** 36.2
- **Cell** 32.4
- **Ann Med** 3.5
- **J Hos Med** 1.4

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Number of citations

- Number of times your paper has been cited, including or excluding self-citations
- Thomson Reuter calculates Essential Science Indicators Citation Thresholds by discipline
Number of citations

- To be among the top 1% in the world, you must have the following # of citations (2000-2010)
  - Molecular Biology & Genetics: 1229
  - Clinical Medicine: 1390
  - Computer Science: 149

- Average citations for scientific paper = 12.9 for clinical medicine
What to do about Impact Factor and citations

• Don’t stress over it!
  • IF is not meant to be a measure of journal prestige; currently under fire
  • For now, when deciding where to send your article, google the impact factor, but
    -It’s more important that you send the article to a journal with your target audience where it will be cited!
H-Index

- Developed by a physicist at UCSD, Jorge Hirsch (also called Hirsch index)
- Attempts to measure both productivity and impact
- Definition: Scholar with an index of $h$ has published $h$ papers that have been cited at least $h$ times
- Became popular because of its predictive value for honors like the National Academy or Nobel Prize
Faculty Development

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H-Index

Source: Wikipedia.org

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H-Index

**Advantages**
- Takes into account impact (your papers have actually been read and cited) as well as number

**Disadvantages**
- Favors more senior scientists because it’s cumulative
- Comparable within fields but not across fields because citation conventions differ

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H-Index

- According to Hirsch, for physicists:
  - H-index of ~12 typical for promotion to tenured Associate Professors
  - H-index of ~15 typical for promotion to full professor
  - H-index of ~45 typical of National Academy of Sciences
- For Emory physicians, averages differ:
  - Associate Professor, CT ~6-10; TT=10-16
  - Professor, CT ~11-33; TT=19-25

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How to calculate your H-index

Use Web of Science, not Google Scholar

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Bottom line

- No single scholarship metric is perfect; must be considered together
- Early in your career, focus on abstracts, publications and then grants
- Aim for higher impact journals where possible, but keep the focus on the audience
- Add reviews, book chapters when opportunity arises (reviews especially are usually highly cited)
A final piece of advice

- Understand expectations, but don’t focus on metrics
  — do what you enjoy and use grants as a way to get money to do it and publications as a way to share your success
- The numbers will follow!

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