

# How to be a good graduate student?

Dr. Mohamed Omar Abdelgawad

Assistant Professor

Mechanical Engineering Department

Assiut University

[www.assiutmicrofluidics.com](http://www.assiutmicrofluidics.com)



# Outline

- Key advice.
- Good research practices.
- Staying on top of Literature.
  - Staying up-to-date
  - Managing your papers collection.
- Assessing your research impact.
- Increasing your research visibility.

# Key advice

- Choose a project that is interesting to you.
- Own your project.
- Being smart is not enough.
  - “Genius is 1% inspiration and 99% pers Thomas Adison
  - Hard work beats talent.
- Know what has been done in your field
- Think out of the box; be creative!
- Team work.
- Keep the big picture in front of you.



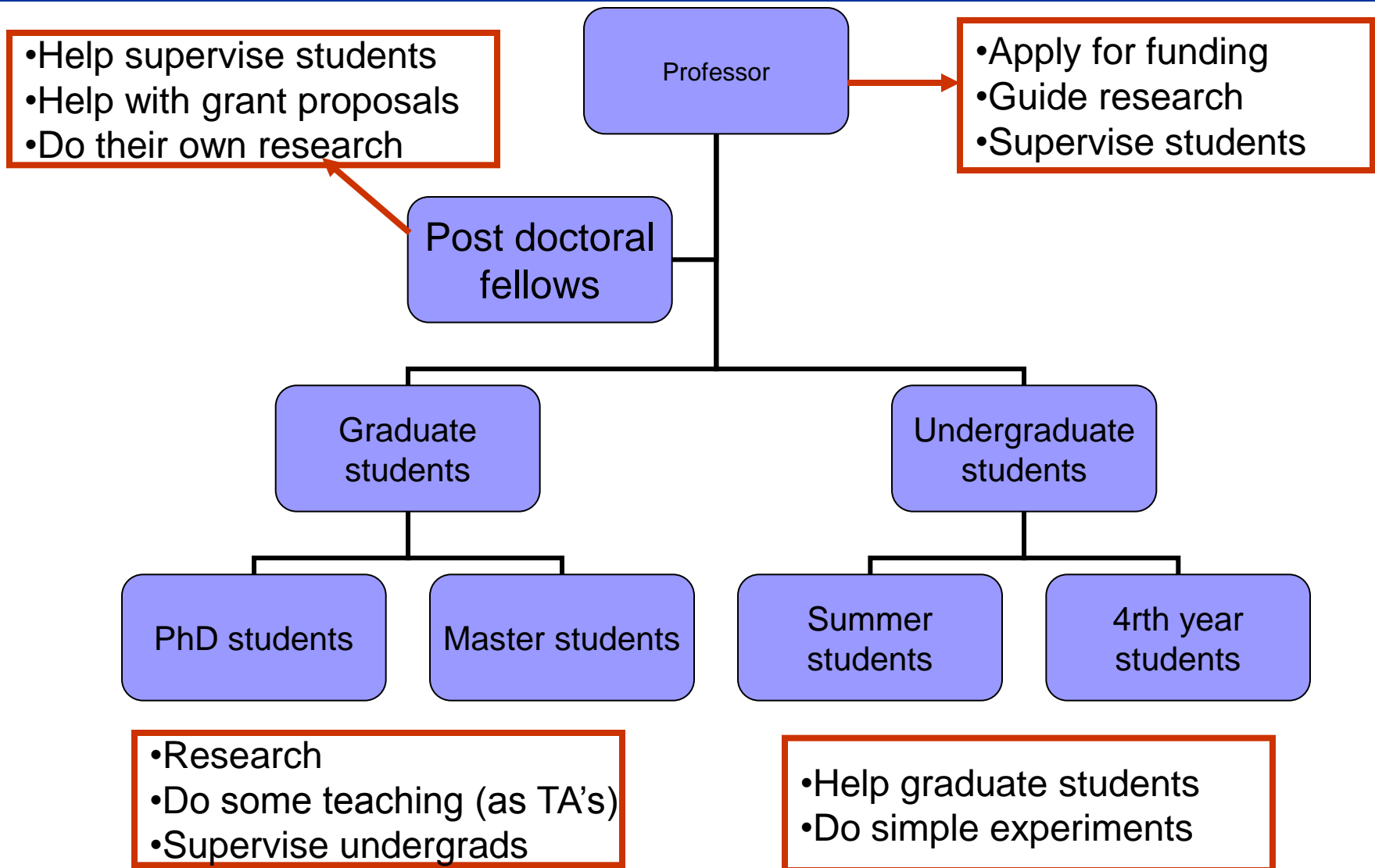
www.phdcomics.com



# Outline

- Key advice.
- Good research practices.
- Staying on top of Literature.
  - Staying up-to-date
  - Managing your papers collection.
- Assessing your research impact.
- Increasing your research visibility.

# Structure of research labs in North America





# Good research practices-I

- **Work hard.**
  - Research is all about testing MANY parameters and finding the best combination.
- **Work on more than one project.**
  - Safer and more productive.
  - Supervise undergrads on side projects.
- **Keep a good lab notebook**
  - Write down your experiments or simulation results every day.
  - Helps keep track of your achievements and planning for future steps
  - Allow your work to be reproduced by others.
  - Protect your IP rights.
- **Regular meetings with your supervisor.**
  - Group meetings and individual meetings
  - Points you to available resources.
  - Keeps you on track.

# Good research practices-II

## ■ Publish, Publish, Publish!

- Publications are the most important indicator of your performance as a researcher.
- Have a clear plan of possible publications as early as possible.

## ■ Expect hardship

- The path to success will not be without setbacks.
- Expect and accept criticism

## ■ Share your research with the world

- Talk about your projects with other researchers.
- Welcome opportunities to give seminars and presentations.
- Participate in conferences.



## ■ Give credit to those who deserve it.

## ■ Finally, have fun! Life is all about balance.



# Outline

- Key advice.
- Good research practices.
- Staying on top of Literature.
  - Staying up-to-date
  - Managing your papers collection.
- Assessing your research impact.
- Increasing your research visibility.





# Staying on top of literature

---

- You can't make a contribution to the literature unless you know what is already there and what is missing.
- Probably many of the problems you are facing have faced others before.
- Learning what others are doing can give you ideas of new applications for your findings or help you improve them.

# Subscribe to e-mail alerts

- Set popular databases (Science direct, IEEE explore, scopus) to send you notifications of new papers in your field once they are published.

The screenshot shows a Scopus search interface. At the top, the search query is "TITLE-ABS-KEY(adaptive traffic signal control) AND RECENT(30)". Below the query, there is a "Refine Results" section with a list of source titles and checkboxes. A red arrow points from a red callout box to the "Refine Results" section. The callout box contains the text "You can use names of famous authors instead". Below the "Refine Results" section, there is a "Results: 3" section with a table of search results. The table has columns for "Document (sort by relevance)", "Author(s)", "Date", "Source Title", and "Cited By".

**You can use names of famous authors instead**

Document (sort by relevance)	Author(s)	Date	Source Title	Cited By
1. <input type="checkbox"/> Adaptive fuzzy urban traffic flow control using a cooperative multi-agent system based on two stage fuzzy clustering <a href="#">Abstract + Refs</a> <a href="#">SFX</a> <a href="#">Show Abstract</a>	<a href="#">Daneshfar, F.</a> , <a href="#">RavanJamJah, J.</a> , <a href="#">Mansoori, F.</a> , <a href="#">Bevrani, H.</a> , <a href="#">Azami, B.Z.</a>	2009	IEEE Vehicular Technology Conference, art. no. 5073360	0
2. <input type="checkbox"/> The development of Taiwan arterial traffic-adaptive signal control system and its field test: A Taiwan experience <a href="#">Abstract + Refs</a> <a href="#">SFX</a> <a href="#">Full Text</a> <a href="#">Show Abstract</a>	<a href="#">Wu, Y.-T.</a> , <a href="#">Ho, C.-H.</a>	2009	Journal of Advanced Transportation 43 (4), pp. 455-480	0
3. <input type="checkbox"/> Bus priority option tests in microsimulation with SCATS <a href="#">Abstract + Refs</a> <a href="#">SFX</a> <a href="#">Show Abstract</a>	<a href="#">Xiang, M.</a> , <a href="#">Hardcastle, S.</a>	2008	Proceedings of the 6th International Conference on Traffic and Transportation Studies Congress 2008: Traffic and Transportation Studies Congress 2008, ICTTS 2008 322, pp. 540-552	0

# Subscribe to journals alerts

- Will send you the content of each new issue published by the journal

## Lab on a Chip

Miniaturisation for chemistry, physics, biology and bioengineering

Issue two of *Lab on a Chip* features an interesting Focus about [nutrition analysis and microfluidics](#), and HOT papers discussing [el](#)

Have you seen our new [Facebook page for Chips and Tips](#)? 'Like' us to join the discussion – we'd love to hear your tips for chips!

[Contents list for \*Lab on a Chip\*, issue 2, 2013](#)

### Papers

[Label-free electrophysiological cytometry for stem cell-derived cardiomyocyte clusters](#)

Frank B. Myers, Christopher K. Zarins, Oscar J. Abilez and Luke P. Lee, *Lab Chip*, 2013, **13**, 220

[Cross talk between cancer and immune cells: exploring complex dynamics in a microfluidic environment](#)

Luca Businaro, Adele De Ninno, Giovanna Schiavoni, Valeria Lucarini, Gabriele Ciasca, Annamaria Gerardino, Filippo Belardelli, Lucia Gabriele and Fabrizio Mattei, *Lab Chip*, 2013, **13**, 229

[High-throughput genome scanning in constant tension fluidic funnels](#)

Joshua W. Griffiths, Ekaterina Protozanova, Douglas B. Cameron and Robert H. Meltzer, *Lab Chip*, 2013, **13**, 240

[Benchtop fabrication of microfluidic systems based on curable polymers with improved solvent compatibility](#)

Michinao Hashimoto, Robert Langer and Daniel S. Kohane, *Lab Chip*, 2013, **13**, 252

[Trace analysis of mercury\(II\) ions using aptamer-modified Au/Ag core-shell nanoparticles and SERS spectroscopy in a microdroplet channel](#)

Eunsu Chung, Rongke Gao, Juhui Ko, Namhyun Choi, Dong Woo Lim, Eun Kyu Lee, Soo-ik Chang and Jaebum Choo, *Lab Chip*, 2013, **13**, 260

[Programmable active droplet generation enabled by integrated pneumatic micropumps](#)

Yong Zeng, Mimi Shin and Tanyu Wang, *Lab Chip*, 2013, **13**, 267

[Dynamics of a microliquid prism actuated by electrowetting](#)

Duck-Gyu Lee, Jaebum Park, Jungmok Bae and Ho-Young Kim, *Lab Chip*, 2013, **13**, 274

[Rapid antibiotic susceptibility testing by tracking single cell growth in a microfluidic agarose channel system](#)

Jungil Choi, Yong-Gyun Jung, Jeewoo Kim, Sungbum Kim, Yushin Jung, Hunjong Na and Sunghoon Kwon, *Lab Chip*, 2013, **13**, 280

[Digitally programmable microfluidic automaton for multiscale combinatorial mixing and sample processing](#)

Erik C. Jensen, Amanda M. Stockton, Thomas N. Chiesi, Jungkyu Kim, Abhisek Bera and Richard A. Mathies, *Lab Chip*, 2013, **13**, 288

[Nanoliter droplet viscometer with additive-free operation](#)

Eric Livak-Dahl, Jaesung Lee and Mark A. Burns, *Lab Chip*, 2013, **13**, 297

[Low-voltage manipulation of an aqueous droplet in a microchannel via tunable wetting on PPy\(DBS\)](#)

Yao-Tsan Tsai, Chang-Hwan Choi and Eui-Hyeok Yang, *Lab Chip*, 2013, **13**, 302



# Check websites of other universities

- Learn about their research projects and publications before they appear.
- Some data (videos, presentations, posters) are only available on the group website.
- Search for theses of the lab alumni.
- Examples:  
<http://www.chem.utoronto.ca/staff/WHEELER/html/Main.htm>



# Attend conferences

## ■ Arrive prepared:

- Choose presentations you want to attend.
- Decide whom you want to meet.
- Prepare 1 min talk about your research.
- Prepare many business cards.

## ■ At the conference:

- Use every chance to talk to other researchers about their work and yours.
- Get advice from senior researchers about new directions developing in your field.
- Share your knowledge of the literature with others (exchange papers, websites..etc)

## ■ After the conference:

- Summarize what you saw and learned (better in the form of a presentation to your lab mates who didn't attend)



# How to read a paper in 5 minutes?

1. Read the title and abstract
2. Look at the figures and read their captions.
3. Read the conclusion
4. Check the methods or results section for more info, if you need any.

# Use bibliography software

- EndNote, Procite, Refworks, Mendley
- Serve two purposes:
  - Manage your database of papers effectively
    - Locate any paper you read before in few seconds
    - Keep the comments you made on any paper electronically
    - Great when combined with Adobe professional
  - Make writing reference lists for your manuscripts/thesis a lot easier.
    - Create reference lists in one click
    - Change citation style to match any journal in few seconds
- Learning how to use MS Word properly is of equal importance.



www.phdcomics.com



# Outline

- Key advice.
- Good research practices.
- Staying on top of Literature.
  - Staying up-to-date
  - Managing your papers collection.
- **Assessing your research impact.**
- Increasing your research visibility.





# Journal Impact Factor (IF)

- A journal IF in any year is the average number of citations in that year given to the papers published in that journal in the two preceding years.
- IF for Journal of Fluid Mechanics:
  - 501 papers in 2007 and 487 papers in 2006
  - Total number of citations for these papers in 2008 was 2287
  - IF in 2008 is  $2287/(501+487)=2.315$



# Impact Factor-II

- Highest IF is 101 for Cancer Journal for Clinicians
- Out of 8330 journals listed on ISI, only 153 has an IF above 10.
- Engineering journals have much lower impact factors ( $<2$ ) than science journals.
- Is the IF a fair parameter:
  - Self citations?
  - Review journals?

# How to assess your research impact?

- The number of citations your papers get.
- Average citation per paper.
- Your individual impact factor.
- *Your h-index:*
  - *h*-index of 4 = you have 4 papers cited more than 4 times each.
  - *h*-index of 6 = you have 6 papers cited more than 6 times each
  - Ahmad Zweil *h*-index was 45 in 2010



Adobe Acrobat  
Document



# Increase your research visibility

1. Publish in high IF journals.
  - Cited more frequently.
  - Have connections to the media.
2. Maintain a descent well-updated webpage.
3. Post your papers on your homepage.
4. Present at conferences
5. Publish in open access journals.  
([www.doaj.org](http://www.doaj.org))



# References

1. G. Chenevix, How to be a good PhD student?, *Nature*, vol. 441, n. 11, pp. 252, 2006.
2. T. Erren, P. Cullen, M. Erren, P. Bourne, Ten Simple Rules for Doing Your Best Research, *PLoS Computational Biology*, vol. 3, n. 10, pp. 1839, 2007.
3. R. M. Reis, How to Get the Most Out of Scientific Conferences, *The Chronicle of Higher Education*, Feb. 4<sup>th</sup>, 2000.  
<http://chronicle.com/article/How-to-Get-the-Most-Out-of-/46399>
4. G. M. Whitesides, Whitesides's Group: Writing a paper, *Advanced Materials*, vol. 16. n. 15, pp. 1375, 2004.
5. P. Bourne, Ten Simple Rules for Getting Published, *PLoS Computational Biology*, volume 1, n. 5, pp. 341, 2005.
6. An excerpt from the book "Writing Your Journal Article in 12 Weeks: A Guide to Academic Publishing Success" by Wendy Laura Belcher, SAGE Publications Inc., Thousand Oaks, California.  
<http://tomprofblog.mit.edu/2009/04/14/939-responding-to-journal-decisions/>
7. "Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty" a book by Burroughs Wellcome Fund and Howard Hughes Medical Institute.  
[http://www.hhmi.org/resources/labmanagement/mtrmoves\\_download.html](http://www.hhmi.org/resources/labmanagement/mtrmoves_download.html)

# Acknowledgement

- Prof. Aaron Wheeler





Thanks for your  
attention