



JAGIELLONIAN UNIVERSITY
IN KRAKOW

Why to apply for a grant?

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room: 3.035.

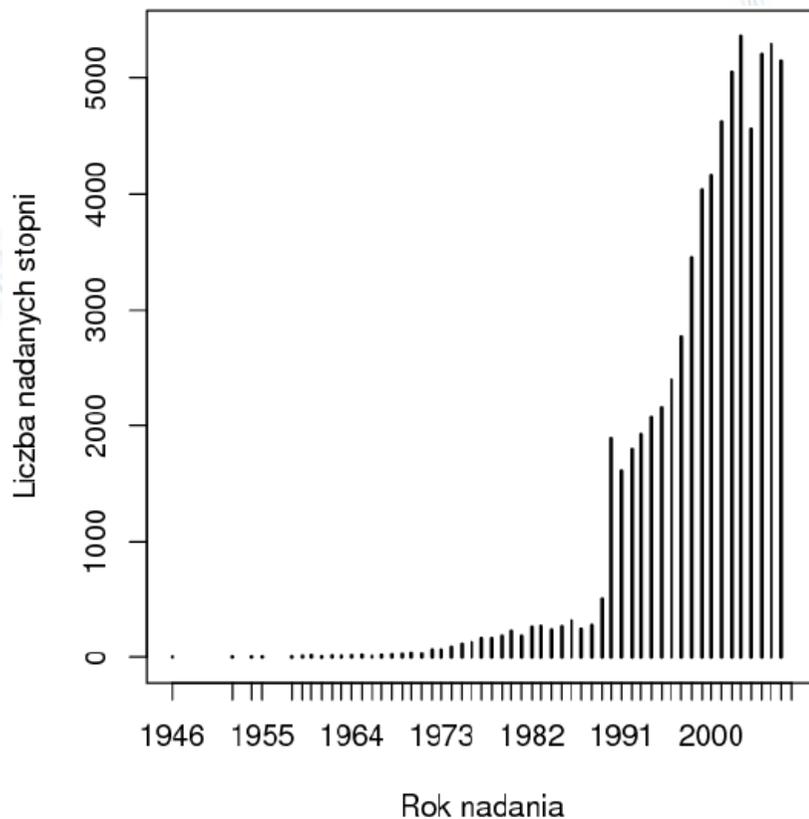


PhDs like mushrooms...

- More and more people are earning PhDs in science, technology and engineering.

* Such expansion results in an extraordinary amount of good research.

* Most of those with PhDs quickly find good jobs outside academia.



PhD in Poland

PhD students, December 2014

| | |
|-----------------------|--------------|
| RAZEM: UJ + CM | 3 308 |
| UJ | 3 018 |
| CM | 290 |





PhDs like mushrooms...

But:

- Unlimited growth could dilute the quality of PhDs.
- Expansion is driven without giving thought to how the labour market will accommodate those who emerge.
- PhD holders are slogging through 5-10 years of poorly paid postdoctoral fellowships, applying for a permanent academic position.
- The system is driven solely by the supply of research funding.
- Currently **you can survive as long as you are rewarded with grants** (which pay for PhD students and staff) and publications.





If you have become a PI...



WWW.PHDCOMICS.COM





PhD and salary in Poland

■ Na ile doktorat wpływa na wysokość pensji

| | próba | 25 proc. badanych zarabia mniej niż | mediana | 25 proc. badanych zarabia więcej niż |
|---|--------|--|---------|---|
| Wynagrodzenie osób z doktoratem i bez doktoratu | | | | |
| z tytułem doktora | 2273 | 3488 | 4800 | 8300 |
| bez doktoratu | 60 801 | 3250 | 4950 | 8000 |
| Wynagrodzenie osób z doktoratem i osób z wykształceniem wyższym magisterskim i inżynierskim | | | | |
| doktorat | 2273 | 3488 | 4800 | 8300 |
| wyższe magisterskie inżynierskie | 22 077 | 3700 | 5500 | 8900 |
| wyższe magisterskie | 40 997 | 3050 | 4500 | 7500 |
| Porównanie wynagrodzenia osób z doktoratem z wykształceniem magisterskim z zarobkami osób z doktoratem z wykształceniem wyższym inżynierskim | | | | |
| wyższe magisterskie inżynierskie | 850 | 3630 | 5400 | 9000 |
| wyższe magisterskie | 1423 | 3315 | 4405 | 8000 |

Źródło: Ogólnopolskie Badanie Wynagrodzeń przeprowadzone przez Sedlak & Sedlak w 2013r.
(też weź udział w badaniu: wynagrodzenia.pl/obw). Kwoty brutto w złotych





Stay or go?

A) Different institution for every stage from undergraduate to faculty position.

- * currently the most recommended
- * it is good to move if you have that flexibility (new research strategies, new collaborations)

B) Two or more institutions, the same for *consecutive* stages.

- * common believe: it isn't in a student's best interest to stay from undergrad to grad; they should move on.
- * For postdoc: moving to another institution (preferentially abroad) is necessary.

There are dedicated funds for postdoc coming back - this gives a chance to establish new lab.

C) All stages at one place.

- * they stayed at the same place because no one else wanted them (?)
- * they are so awesome, University didn't want them to leave (?)

- Academia is not one-size-fits-all, and there is room for all sorts of career paths





Stay or go?

Polska

Hiszpania

Belgia

Szwecja

Irlandia

Dania

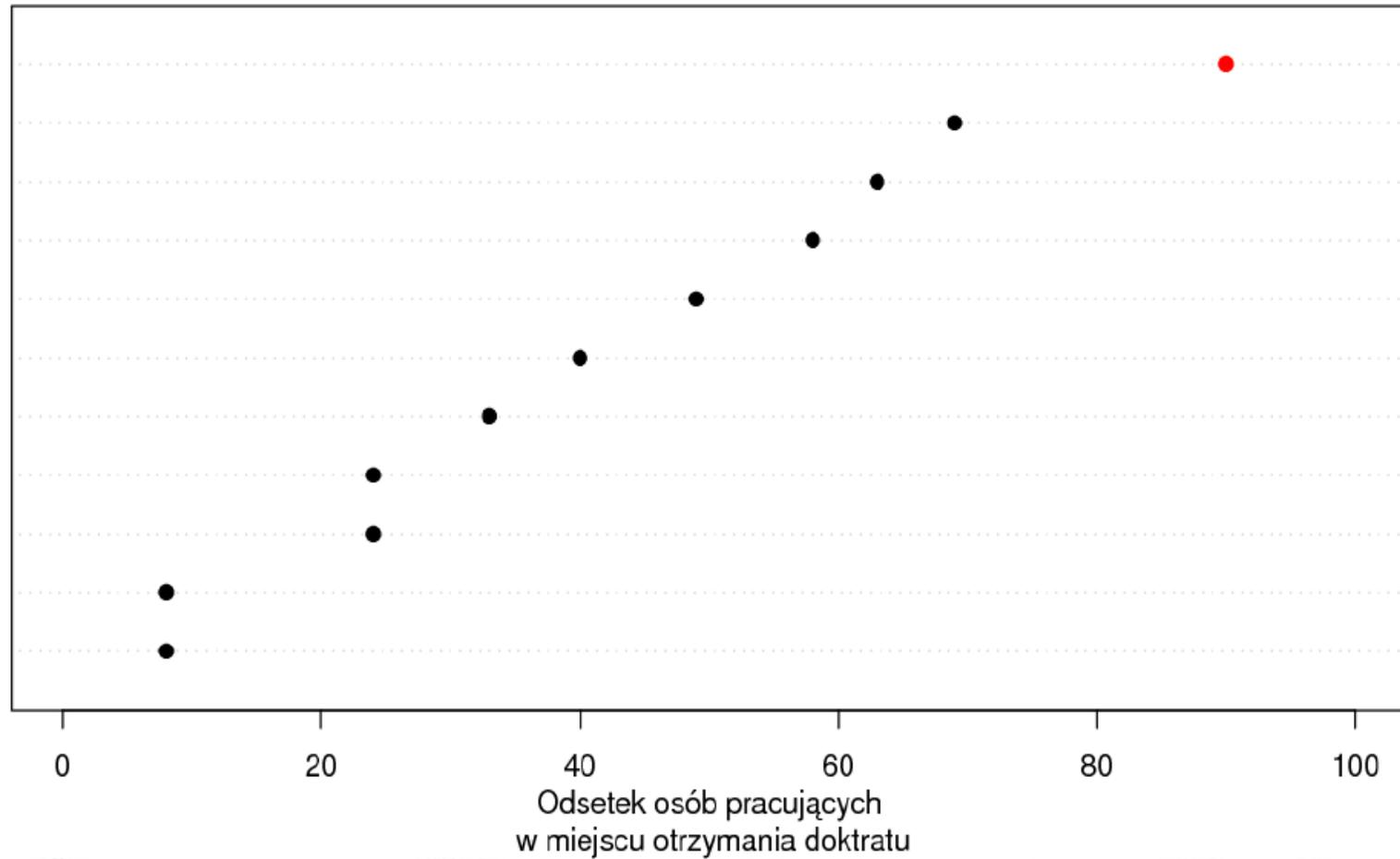
Holandia

Szwajcaria

Włochy

Wielka Brytania

Niemcy





What after postdoc?....

- The career structure in universities is broken, particularly in the life sciences.
- Fellowships are few, every advertised academic post draws a flood of candidates.
- Researchers face a widening chasm between their cycles of contract work and a coveted PI position.
- The system needs only one replacement per lab-head position, but over the course of career, a typical biologist will train dozens of suitable candidates.
- Landing a lab-head position requires a strong publication record (*needed: skills, hard work and luck*)



“I have trained dozens of Postdocs.
One of them even got a faculty position!”





What after postdoc?...

- To force a highly trained postdoc from research is a waste of time and public expense.

But:

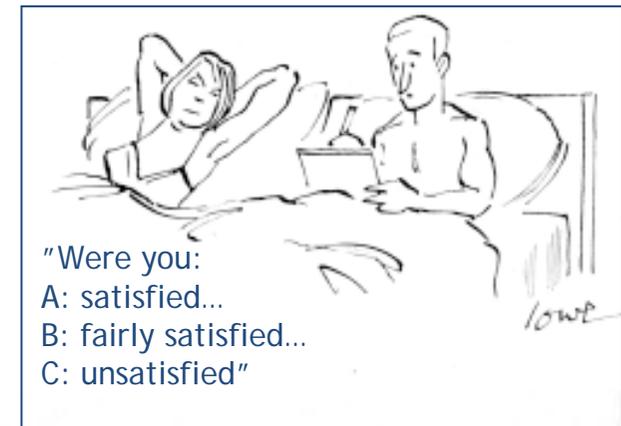
- Beyond research, there are science-related jobs, such as in:

- * publishing,
- * grants' administration,
- * auditing,
- * public engagement.

- These positions seldom require more than a doctorate, if that.

Also:

- The ageing postdoc, when starting again in a different career, after long period of relatively low pay, can be years behind in terms of savings and pensions.



undergraduate

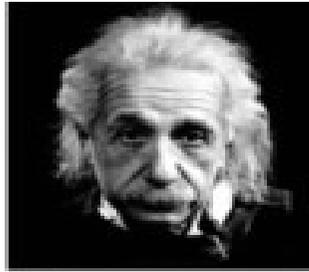
PhD student

postdoc

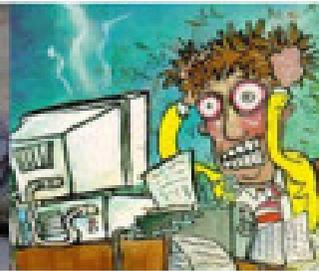
PI / Professor

technician

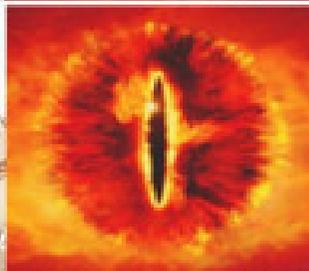
seen by undergraduate



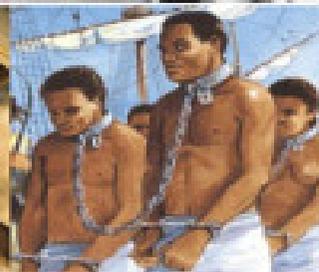
seen by PhD student



seen by postdoc



seen by PI / Professor



seen by technician



created by
@biomatushiq
<http://sotak.info/sci.jpg>



If you want to become a team member

- Research technician is an important (priceless!) part of a scientific lab, participating in high-tech, high-profile studies.
- The research technicians:
 - * set up, operate, and maintain the lab equipment;
 - * are professionally trained in taking and collecting data, performing experiments [*or: caring for the plants and animals used in studies*];
 - * interpret data, develop conclusions;
 - * are the highest quality specialists (very often the best trained in the team) in application of demanding techniques.
- The work performed by the research technician is extremely valuable and well trained and educated persons are always in demand.





If you want to become a team member

- Be ready to introduce new techniques and optimize methods used in you lab.
- Be aware that your duties are repetitive and your results will be (often) presented by someone else.
- **But:**
 - * you do not need to think about research funds
 - * you do not need to prepare, run and report research project
 - * you can go home at 5 pm and forget about lab - your free time is yours



(if you are PI scientist you simply do not have anything like "free-time")





If you want to become a PI

First of all:

- Be genuinely interested in your subject area. The most important motivation: just interest in science, not career development plan.

Then:

- Get a doctorate early (but not too early...) on in your academic career.
- Learn to work independently, demonstrating that you are able to define original research questions.
- Publish your work in the best possible journals.
- Take every opportunity to present at conferences, workshops, etc.
- Get personal funding.
- Collaborate.
- Learn to accept criticism - objective peer review.
- Enjoy your work and don't be afraid to break the rules.





If you want to become a PI

It helps if...

- you have made a successful postdoc abroad, or at least at another university, or at least in another department...
- you have good publications (in high impact journals, well cited)
- you have a number of first/last authorships on papers
- your PhD mentor is not on the author list on all your articles (you have publications from a postdoc training)
- **you have successfully finished your own research project** for PhD students or young investigators
- after postdoc fellowship you have returned to research constellation different from where you were brought up
- you can propose a research project which is novel, excellent, doable etc.
- you are lucky...

You must...

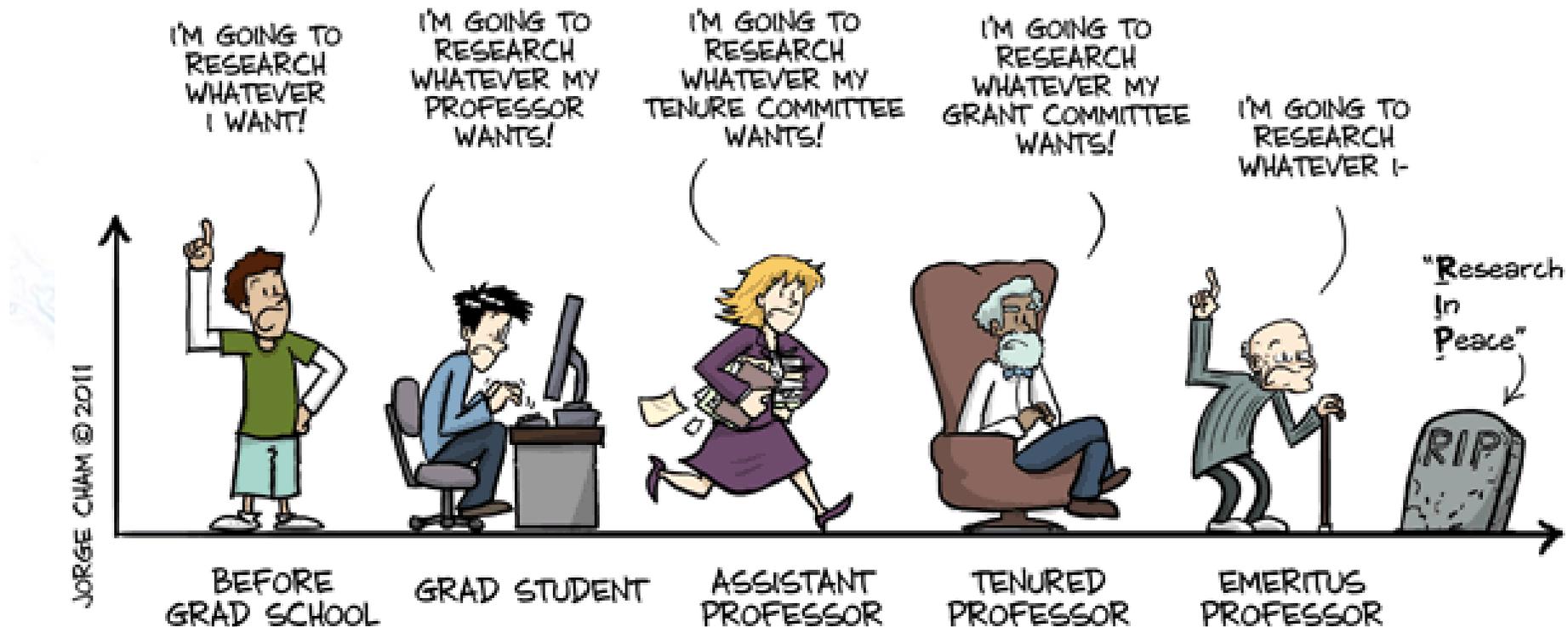
- win a high-budget grant to rent a lab space, employ first PhD students, run a research... No other ways. You must regularly win good research projects.





If you want to become a PI

THE EVOLUTION OF INTELLECTUAL FREEDOM



WWW.PHDCOMICS.COM



Professors



What my parents think I do



What my friends think I do



What my students think I do



What my spouse thinks I do



What my colleagues think I do



What I actually do





Grant *versus* contract

Grant:

- project conceived by investigator
- agency supports or assists
- performer defines details and retains scientific freedom
- agency maintains oversight

Contract:

- project conceived by agency
- agency procures service
- agency exercises direction or control
- agency closely monitors

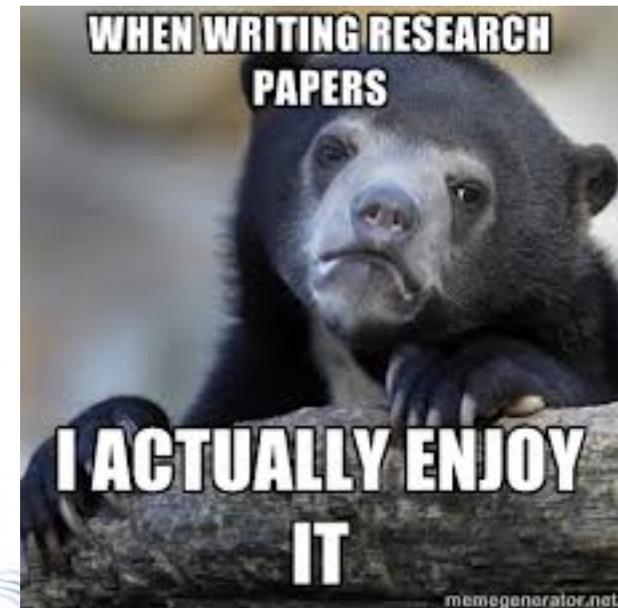




The grant process is never wasted

If you have got it:

- Grants allow you to take control of your scientific development.
- Grants free us to do the kind of research we are really interested in
- Grants bring us:
 - * prestige/independence
 - * reagents, programs, licences etc.
 - * travels and participating the conferences
 - * equipment,
 - * team,
 - * lab space
- As a young investigator - you can increase your salary.



If you have failed:

- Writing a project (even not awarded) requires you to focus your thoughts and precize your research plans
- Armed with reviewers comments the second proposal is always stronger





You can get it

| LP. | NAZWA JEDNOSTKI NAUKOWEJ/WNIOSKODAWCY | LICZBA PROJEKTÓW | PRZYZNANA KWOTA |
|-----|---|------------------|-----------------|
| 1 | Uniwersytet Jagielloński ¹ | 409 | 156 025 805 zł |
| 2 | Uniwersytet Warszawski | 407 | 129 061 242 zł |
| 3 | Uniwersytet im. Adama Mickiewicza w Poznaniu | 212 | 64 328 564 zł |
| 4 | Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie | 145 | 61 595 094 zł |
| 5 | Uniwersytet Wrocławski | 132 | 42 329 740 zł |
| 6 | Politechnika Warszawska | 114 | 50 281 469 zł |
| 7 | Uniwersytet Łódzki | 109 | 25 152 286 zł |
| 8 | Politechnika Wrocławska | 101 | 35 746 151 zł |
| 9 | Uniwersytet Gdański | 95 | 40 093 154 zł |
| 10 | Uniwersytet Śląski w Katowicach | 89 | 28 584 275 zł |
| 11 | Uniwersytet Mikołaja Kopernika w Toruniu ² | 87 | 27 137 980 zł |
| 12 | Politechnika Śląska | 78 | 32 736 362 zł |
| 13 | Politechnika Łódzka | 72 | 29 343 874 zł |
| 14 | Politechnika Gdańska | 65 | 19 600 940 zł |
| 15 | Instytut Biologii Doświadczalnej im. Marcelego Nenckiego PAN | 60 | 30 221 700 zł |





You can get it

Technical science

| LP. | NAZWA JEDNOSTKI NAUKOWEJ/WNIOSKODAWCY | LICZBA PROJEKTÓW | PRZYZNANA KWOTA |
|-----|---|---------------------|--------------------|
| 1 | Uniwersytet Warszawski | 160 | 70 895 484 zł |
| 2 | Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie | 137 | 60 634 030 zł |
| 3 | Uniwersytet Jagielloński | 118 | 51 728 762 zł |
| 4 | Politechnika Warszawska | 108 | 48 650 069 zł |
| 5 | Politechnika Wrocławska | 88 | 32 697 174 zł |
| 6 | Uniwersytet Wrocłowski | 70 | 24 018 733 zł |

Humane science

| LP. | NAZWA JEDNOSTKI NAUKOWEJ/WNIOSKODAWCY | LICZBA PROJEKTÓW | PRZYZNANA KWOTA |
|-----|--|---------------------|--------------------|
| 1 | Uniwersytet Warszawski | 199 | 34 346 072 zł |
| 2 | Uniwersytet Jagielloński | 132 | 27 126 289 zł |
| 3 | Uniwersytet im. Adama Mickiewicza w Poznaniu | 97 | 21 842 263 zł |
| 4 | Uniwersytet Łódzki | 54 | 8 467 322 zł |
| 5 | Uniwersytet Wrocłowski | 42 | 6 243 522 zł |
| 6 | Uniwersytet Ekonomiczny we Wrocławiu | 37 | 5 087 896 zł |

Life science

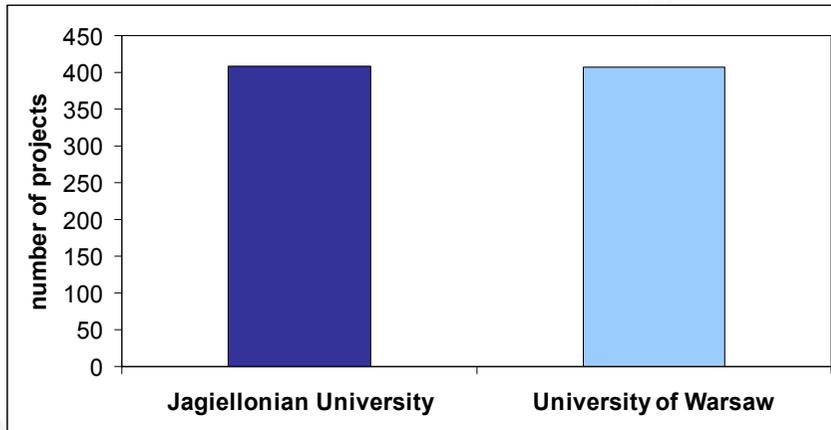
| LP. | NAZWA JEDNOSTKI NAUKOWEJ/WNIOSKODAWCY | LICZBA PROJEKTÓW | PRZYZNANA KWOTA |
|-----|--|---------------------|--------------------|
| 1 | Uniwersytet Jagielloński* | 159 | 77 170 754 zł |
| 2 | Instytut Biologii Doświadczalnej im. Marcelego Nenckiego PAN | 53 | 26 905 700 zł |
| 3 | Uniwersytet Medyczny w Łodzi | 49 | 23 200 762 zł |
| 4 | Uniwersytet Warszawski | 48 | 23 819 686 zł |
| 5 | Uniwersytet im. Adama Mickiewicza w Poznaniu | 47 | 16 360 327 zł |
| 6 | Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu | 42 | 19 240 572 zł |



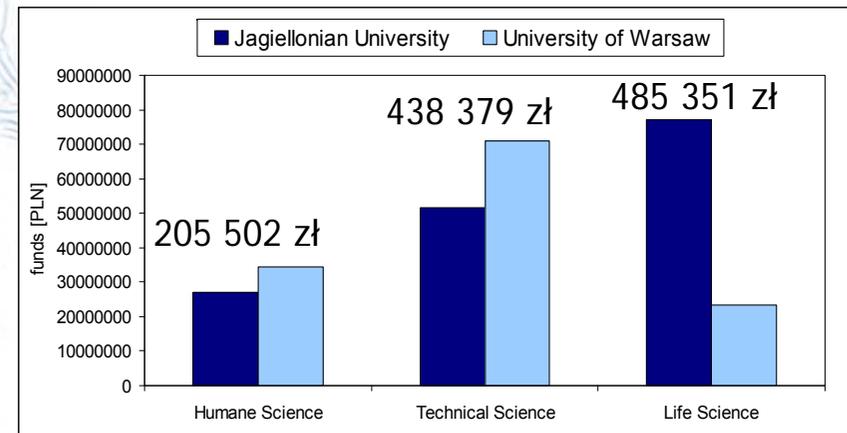
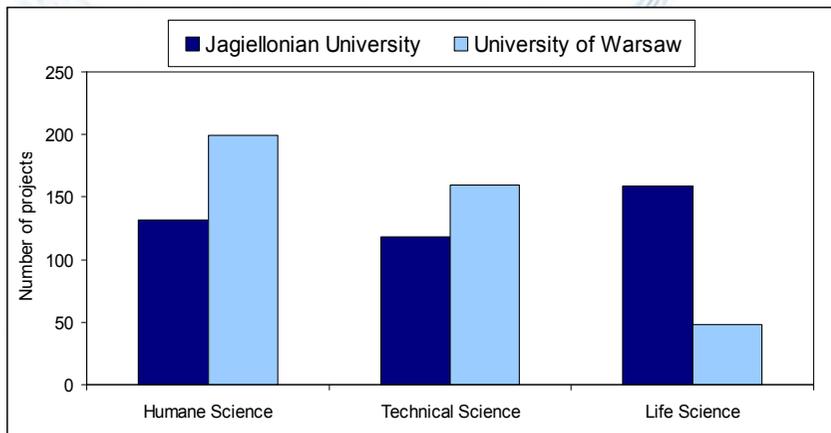
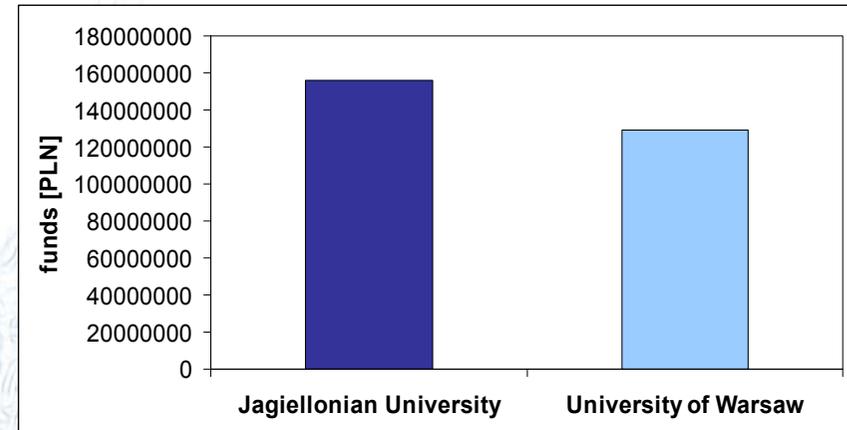


You can get it

Number of projects in 2011/2012



Funds awarded in 2011/2012





You can get it

Grantobiorcy NCN w latach 2011-2012 w konkursach typu OPUS

| LP. | NAZWA JEDNOSTKI NAUKOWEJ/WNIOSKODAWCY | LICZBA PROJEKTÓW | PRYZNANA KWOTA |
|-----|---|------------------|----------------|
| 1 | Uniwersytet Warszawski | 189 | 56 802 811 zł |
| 2 | Uniwersytet Jagielloński | 172 | 64 798 890 zł |
| 3 | Uniwersytet im. Adama Mickiewicza w Poznaniu | 93 | 31 666 808 zł |
| 4 | Uniwersytet Wrocławski | 60 | 17 859 638 zł |
| 5 | Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie | 59 | 27 873 949 zł |
| 6 | Uniwersytet Łódzki | 51 | 15 974 845 zł |

Grantobiorcy NCN w latach 2011-2012 w konkursach typu HARMONIA

| LP. | NAZWA JEDNOSTKI NAUKOWEJ/WNIOSKODAWCY | LICZBA PROJEKTÓW | PRYZNANA KWOTA |
|-----|---|------------------|----------------|
| 1 | Uniwersytet Jagielloński | 11 | 13 308 847 zł |
| 2 | Uniwersytet Warszawski | 10 | 4 054 300 zł |
| 3 | Uniwersytet Łódzki | 6 | 2 094 561 zł |
| 4 | Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie | 4 | 3 108 075 zł |
| 5 | Instytut Biologii Doświadczalnej im. Marcelego Nenckiego PAN | 4 | 2 279 000 zł |
| 6 | Uniwersytet im. Adama Mickiewicza w Poznaniu | 4 | 2 211 364 zł |

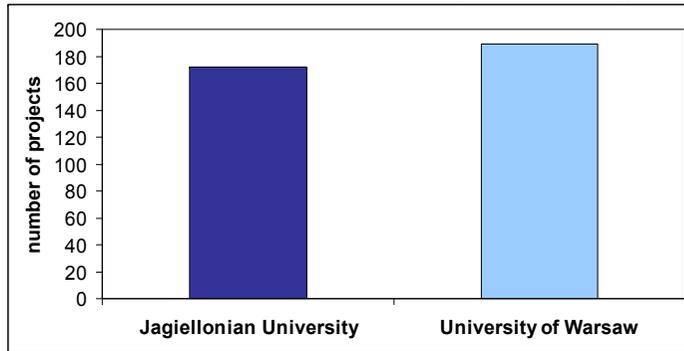
Grantobiorcy NCN w latach 2011-2012 w konkursach typu MAESTRO

| LP. | NAZWA JEDNOSTKI NAUKOWEJ/WNIOSKODAWCY | LICZBA PROJEKTÓW | PRYZNANA KWOTA |
|-----|---|------------------|----------------|
| 1 | Uniwersytet Jagielloński | 16 | 37 746 389 zł |
| 2 | Uniwersytet Warszawski | 14 | 31 202 204 zł |
| 3 | Uniwersytet Wrocławski | 6 | 15 032 030 zł |
| 4 | Uniwersytet im. Adama Mickiewicza w Poznaniu | 5 | 9 991 411 zł |
| 5 | Uniwersytet Gdański | 4 | 9 245 900 zł |
| 6 | Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie | 4 | 7 899 200 zł |

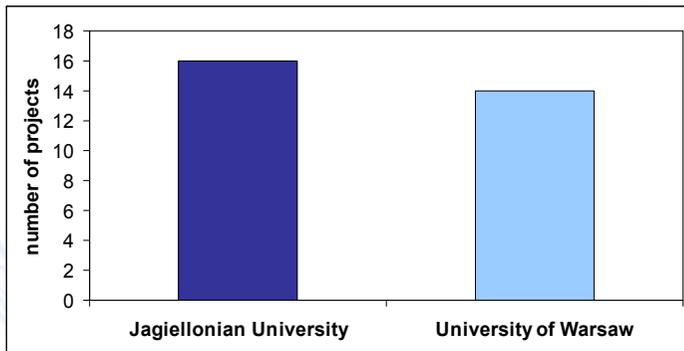
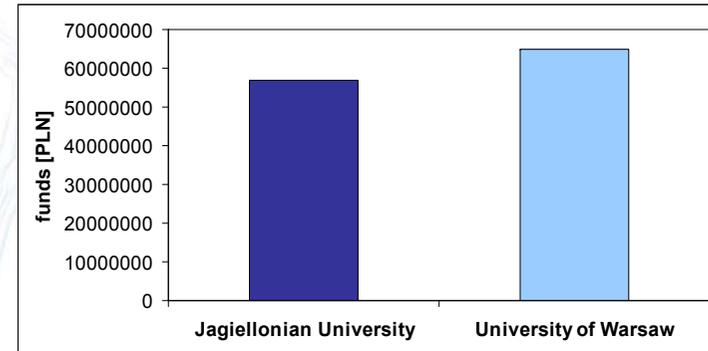




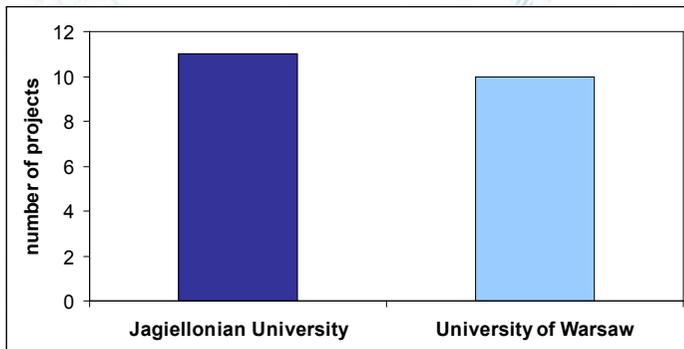
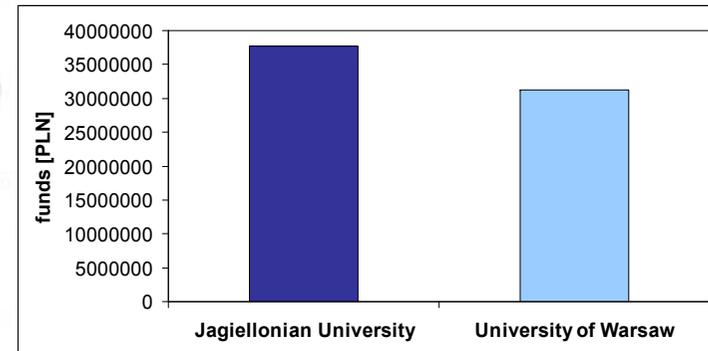
You can get it



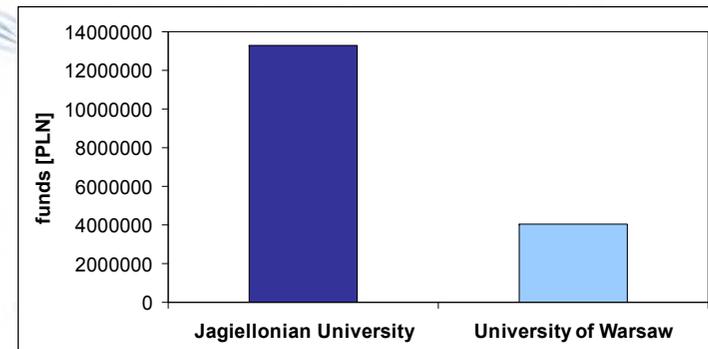
Opus
330 249 zł



Maestro
2 359 149 zł



Harmonia
1 209 895 zł





You can get it

Grantobiorcy NCN w latach 2011-2012 w konkursie STAŻE PODOKTORSKIE NCN 1 (FUGA 1)

| LP. | NAZWA JEDNOSTKI NAUKOWEJ/WNIOSKODAWCY | LICZBA PROJEKTÓW | PRZYZNANA KWOTA |
|-----|--|------------------|-----------------|
| 1 | Uniwersytet Jagielloński | 6 | 2 220 500 zł |
| 2 | Uniwersytet Warszawski | 6 | 2 214 500 zł |
| 3 | Uniwersytet Gdański | 4 | 2 046 500 zł |
| 4 | Uniwersytet im. Adama Mickiewicza w Poznaniu | 4 | 1 906 160 zł |
| 5 | Uniwersytet Szczeciński | 3 | 1 356 500 zł |
| 6 | Instytut Badań Literackich PAN | 3 | 1 072 110 zł |

Grantobiorcy NCN w latach 2011-2012 w konkursach typu PRELUDIUM

| LP. | NAZWA JEDNOSTKI NAUKOWEJ/WNIOSKODAWCY | LICZBA PROJEKTÓW | PRZYZNANA KWOTA |
|-----|---|------------------|-----------------|
| 1 | Uniwersytet Jagielloński | 155 | 15 699 216 zł |
| 2 | Uniwersytet Warszawski | 127 | 10 569 767 zł |
| 3 | Uniwersytet im. Adama Mickiewicza w Poznaniu | 80 | 6 728 301 zł |
| 4 | Uniwersytet Wrocławski | 53 | 4 136 807 zł |
| 5 | Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie | 48 | 5 875 175 zł |
| 6 | Politechnika Warszawska | 39 | 5 434 349 zł |

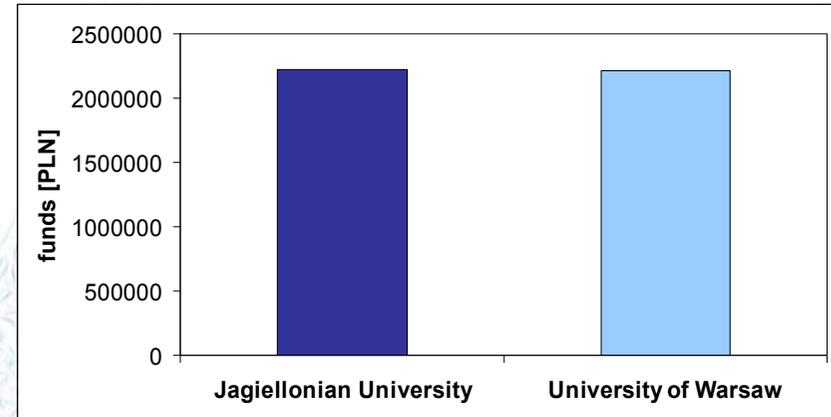
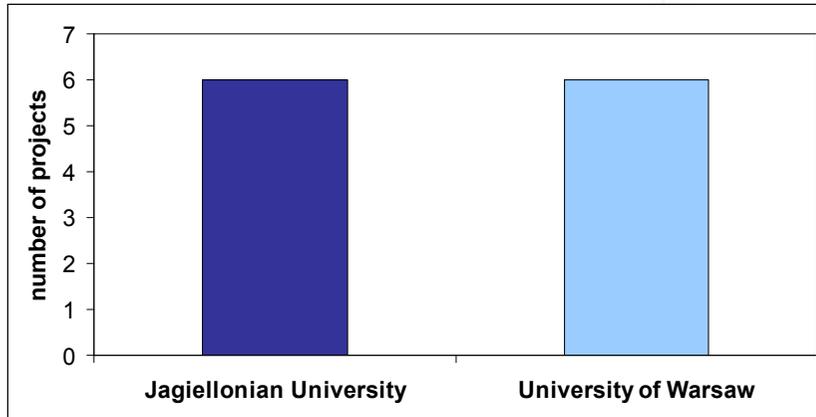




You can get it

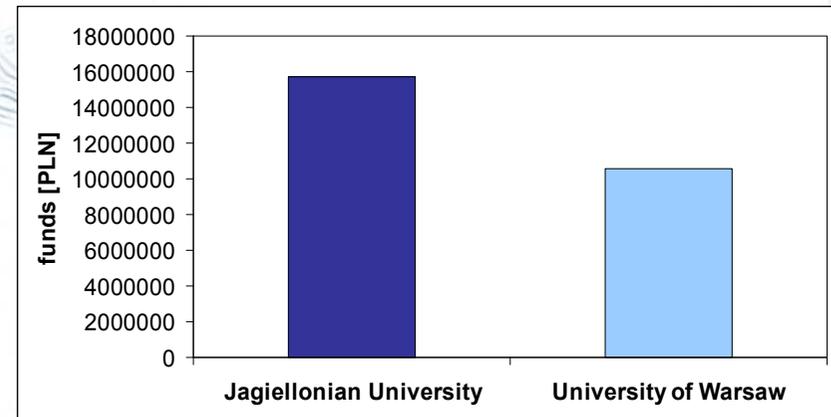
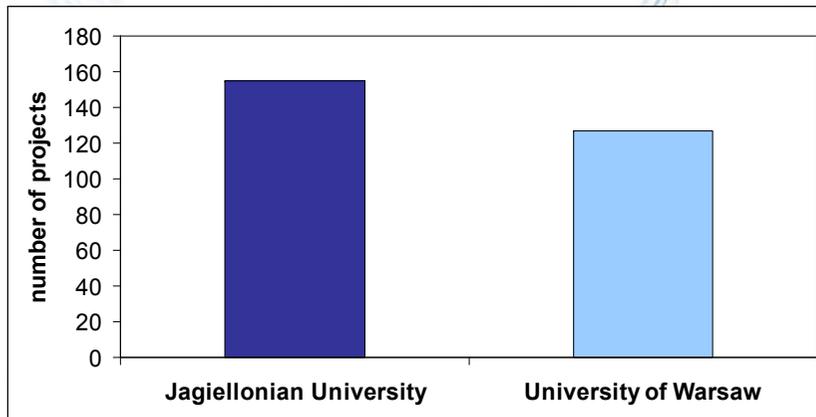
Fuga

370 083 zł



Preludium

101 285 zł





My personal experience

A long time ago....

in Krakow.....



I was born to be a scientist.





My personal experience

Education:

Master thesis



Comparison of time-budgets of the Mute Swans (*Cygnus olor*) wintering in urban and rural areas

PhD thesis



Mechanisms of rejection of the skin allografts and xenografts in Anuran amphibians

Habilitation



PPAR γ and angiogenesis - effect of PPAR γ ligands on endothelial cells.





My personal experience

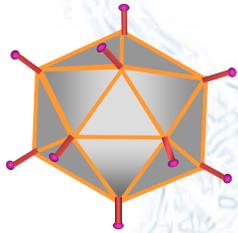
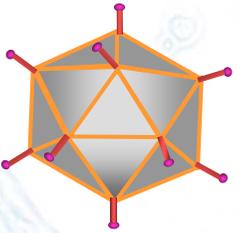
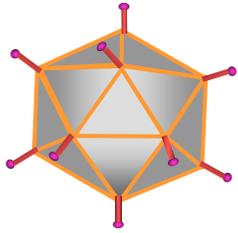
Good place: Houston



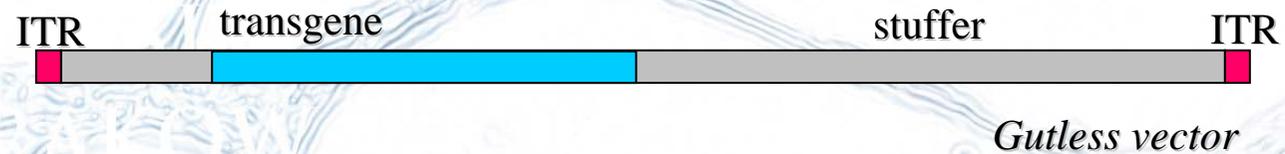
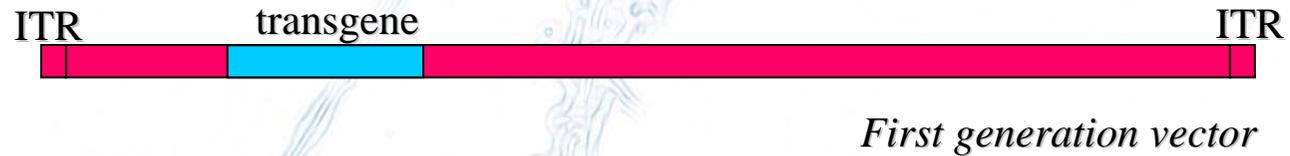


Adenovirus, $\Delta E1$ and gutless vector

capsid



genome



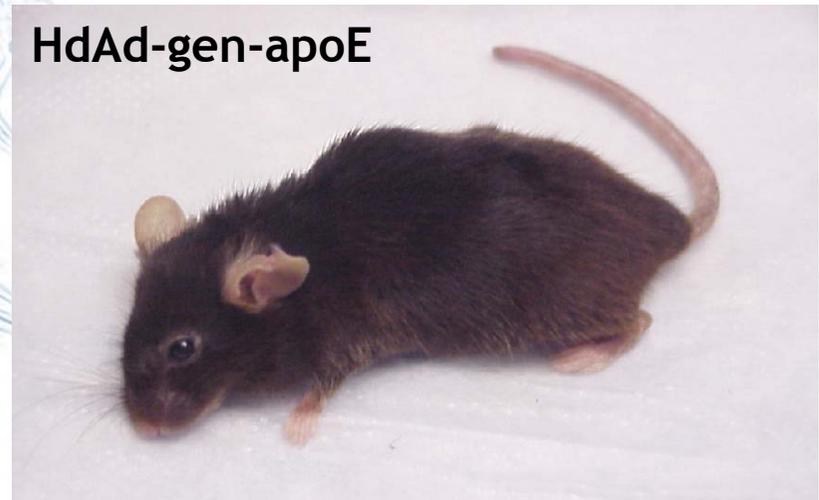


Effect of single injection with apoE gutless vector

apoE-control



HdAd-gen-apoE





My personal experience



Good place: Vienna





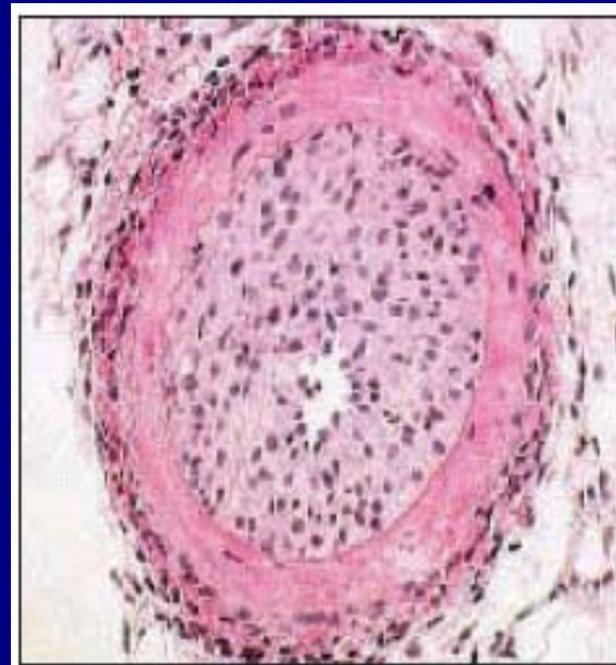
HO-1 deficiency augments neointima formation in mice

Vascular lesion formation at 14 days after a wire-injury of femoral arteries in the wild-type and HO-1^{-/-} mice

WT mice



HO-1^{-/-} mice





Coming back to the best place - Kraków





My personal experience

L'Oreal for Women and Science

Habilitation fellowship

- 1 800 zł/per month for year (my salary this time was 1 200 zł)
- private money - I could buy some small equipment and reagents
- cosmetics 😊
- pleasure for family (cannot be overestimated)
- covering the costs of printing the habilitation thesis





My personal experience



pretty, but...

- furniture
- pipettors
- apparatus for electrophoresis
- reagents
- laboratory plasticware





My personal experience



The Wellcome Trust

International
Senior Research Fellowship
in Biomedical Science

Ministry of Science and
Higher Education
NCN, FNP

Individual grants
Solicited grants
POIG - infrastructural grants
POIG - research grants

Cooperation with industry

ADAMED
SELVITA
PHARMENA
Biovico





Department of Medical Biotechnology

Researchers

Prof. Józef Dulak

Prof. Alicja Józkowicz

Dr. Agnieszka Jaźwa

Dr. Neli Kachamakova-Trojanowska

Dr. Agnieszka Łoboda

Dr. Karolina Bukowska-Strakova

Dr. Urszula Florczyk

Dr. Anna Grochot-Przeczek

Dr. Magdalena Kozakowska

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Ewa Werner

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Department of Medical Biotechnology

Publications:

Atheroscler Throm Vasc Biol, J Exp Med, Science, Nature Med, Circulation, PLoS One, Am J Pathol, Proc Natl Acad Sci USA, JACC, Cardiovasc Res, Oncogene, FASEB J, JBC, Free Radic Biol Med, Antioxid Redox Signal, Cancer Lett, General Comp Endocrinology, BBRC, Thromb Haemostasis, Prostaglandins & Other Lipid Mediators, Clin Sci, Gene, & inne...

Last year our papers have been citted >400 time

Grants:

- a) Ministry of Science and Higher Education (IUVENTUS)
- b) Wellcome Trust International Senior Research Fellowship
- c) EU - 6 FP - the European Vascular Genomic Network - EVGN
- d) POIG - 2.1, 2.2, 1.1.2
- e) Foundation for Polish Science: START, Homing, Pomost, Ventures
- f) NCN: Maestro, Harmonia, Preludium, Opus
- g) NCBiR: PBS, Strategmed
- h) cooperation with industry (agreements with 4 companies)

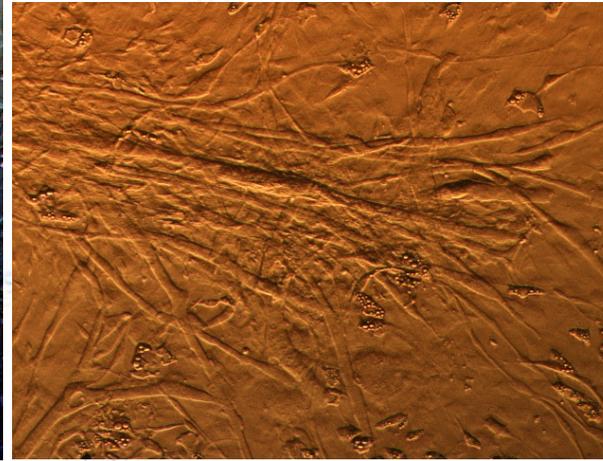
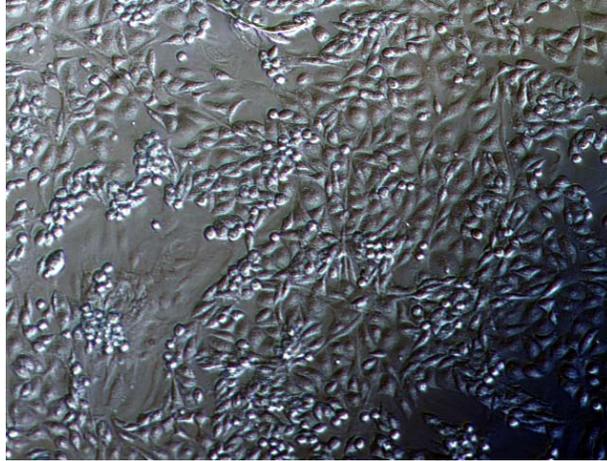




Cell cultures

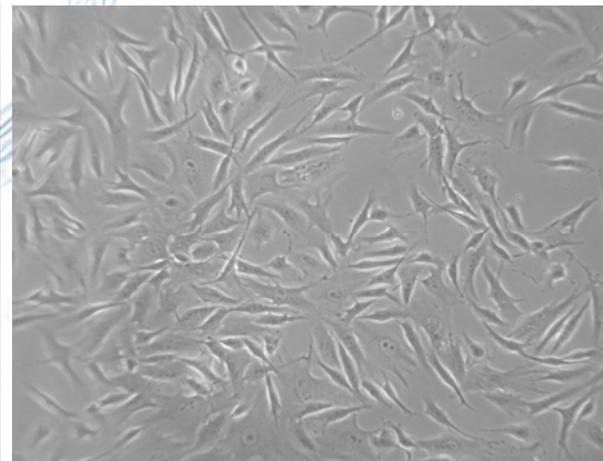
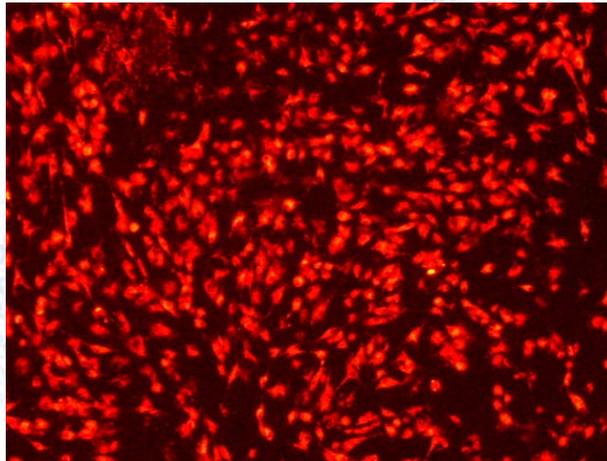
Typical cell culture: cell lines and primary cells

BM PAC



Satellite cells

PAC
AcLDL

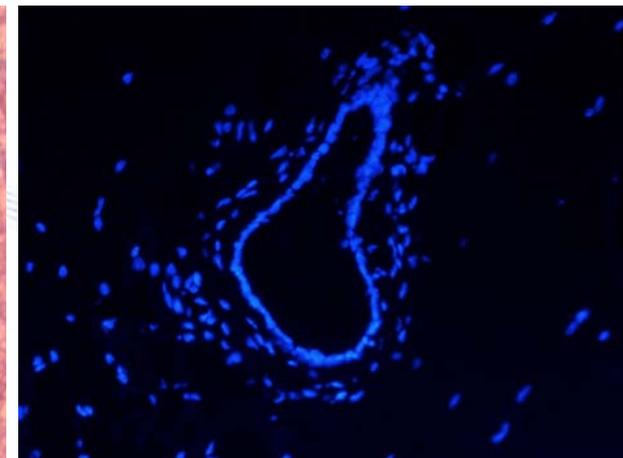
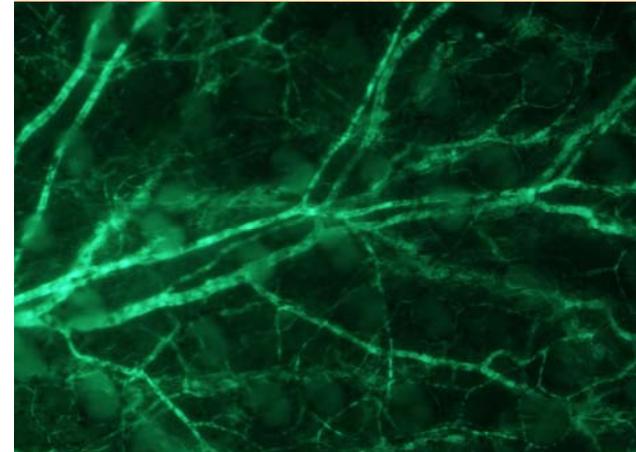
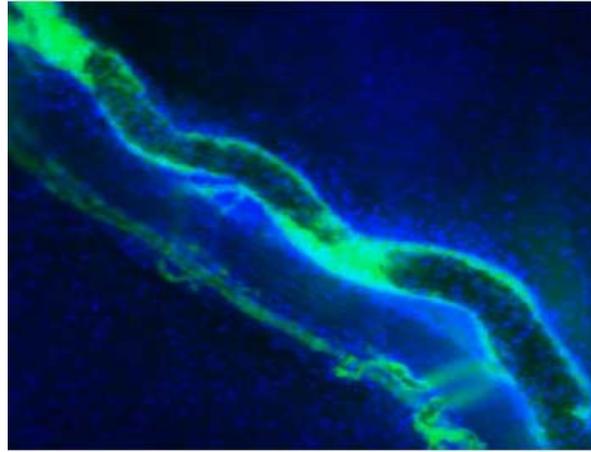


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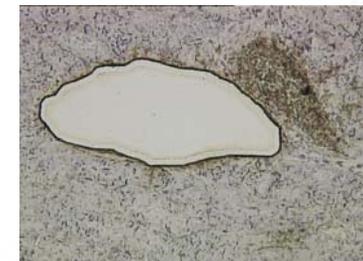
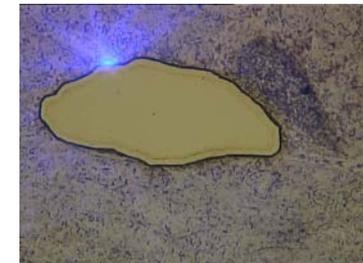


Angiogenesis: *in vivo* models



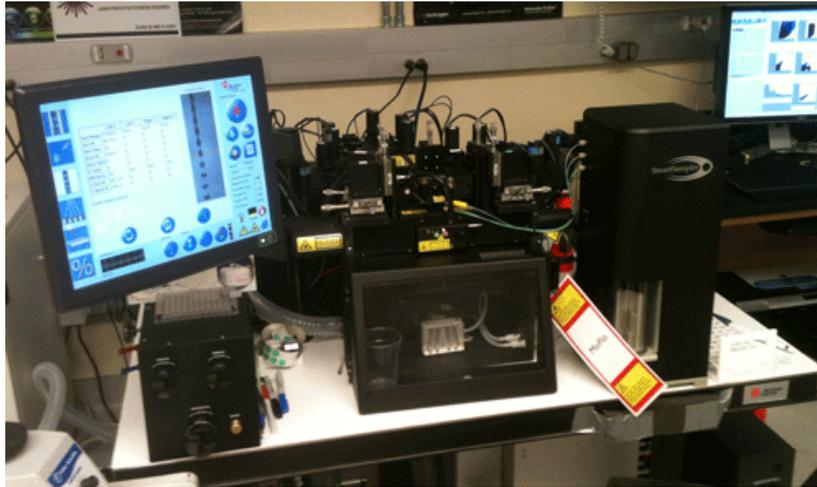


Histology





Flow and image cytometry



MoFlo

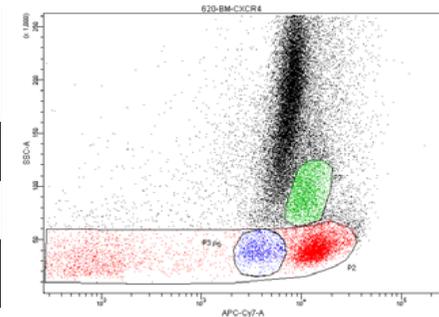
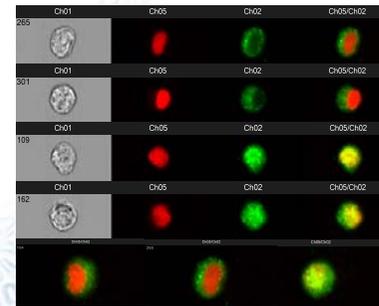


Image Stream



Fortessa





5 years and 7 mln PLN ago





4 years and 7 mln PLN ago



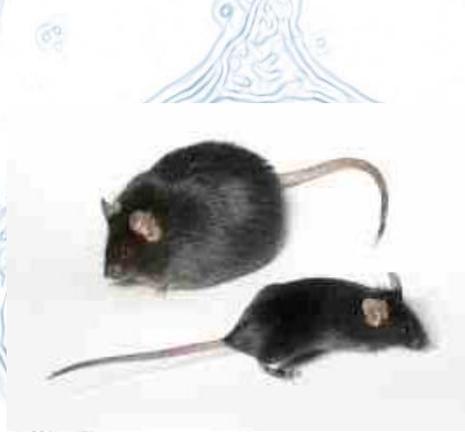


Then...





...and now





Objective of the course

Major aim:

- To provide the knowledge needed to **write a fundable research grant (Preludium)** in the NCN format.
- To provide a comprehensive **overview** of the grant writing process:
 - * how to identify funding sources
 - * how to develop a writing timeline,
 - * how to create and manage a team/how to work as team member,
 - * how to talk to program officers and reviewers,
 - * elements of the complete grant package,
 - * NCN/FNP/MNiSW procedures and review process.
- To provide step by step instructions for developing each section of the research project:
 - * background and rationale,
 - * description of methods,
 - * schedule,
 - * budget and cost justification,
 - * presenting a grant proposal to the reviewer board
 - * managing and reporting a research project





Objective of the course

Additional aims:

- To provide a knowledge on:
 - * intellectual property laws, patenting and commercialization,
 - * practical aspects of cooperation with commercial partners.
 - * research reproducibility, reliability of published data, side effects of "publish or perish" paradigm
 - * pros and cons of teamwork, benefits and traps of research consortia

Training:

- You will prepare a collective or individual proposal according to the "Preludium" scheme. We will discuss:
 - * common errors in grantsmanship and hints how to avoid them.
 - * examples of well and purely done work
- You will prepare also a revision of classmates' proposal for discussion at the reviewer panel. We will discuss:
 - * grant application review criteria,
 - * rules related to grant reviewing.





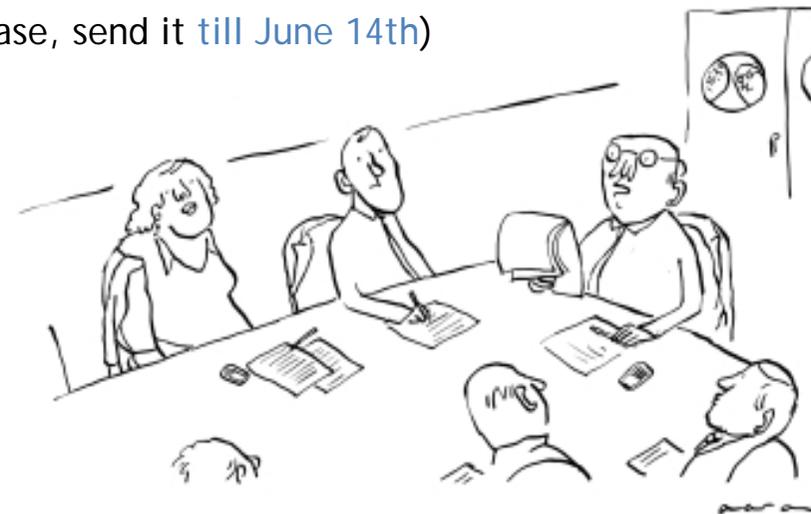
Objective of the course

Passing the course:

- Sending a project proposal and revision of classmate project.
[till [March 31st](#) - please, send me the names of group members and preliminary title of the project]

Criteria:

- Preparing a grant proposal (individual or collaborative) according to the "Preludium" scheme - 75% (please, send it [till May 20th](#))
- Grant revision (individual) - 25% (please, send it [till June 14th](#))



search ID: haan167

"...in conclusion, we're in the wrong meeting room."





What about your project?

Deadlines:

March 31st – submission of names of team members and preliminary title of your project)

May 20th - submission of your project to my email address (everything but Polish 5-page description and CV of supervisor)

May 24th - receiving a few projects (and evaluation form) for revision

June 14th - submission of your evaluation forms to my email address (individual or team work)

June 16th - summary of the most frequent mistakes or best ideas in your projects and reviews.





Thank you 😊



What my parents
think I do



What my friends
think I do



What society
thinks I do



What my boss
thinks I do



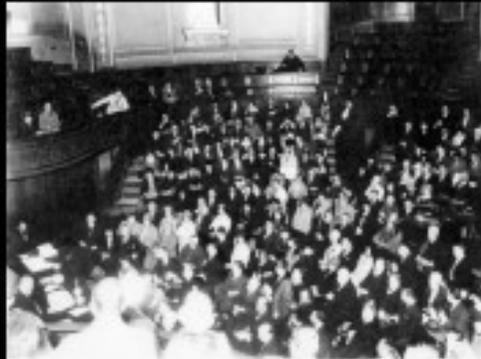
What I think
I do



What I really do



Ph.D. Biomedical



What my folks think I do



What my friends think I do



What the gov't thinks I do



What my prof thinks I do



What I think I do



What I really do