

photonics4life:

“Women in Biophotonics”

Brussels, November 8th 2011

photonics 4 life

EUROPEAN
NETWORK OF EXCELLENCE
FOR BIOPHOTONICS



Biophotonics: Photonic solutions for better health care

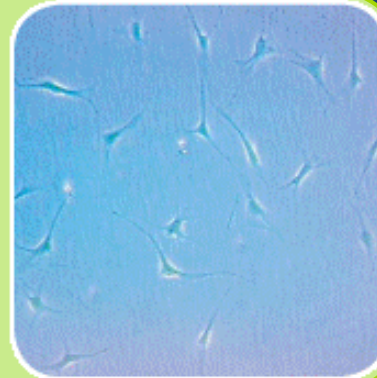
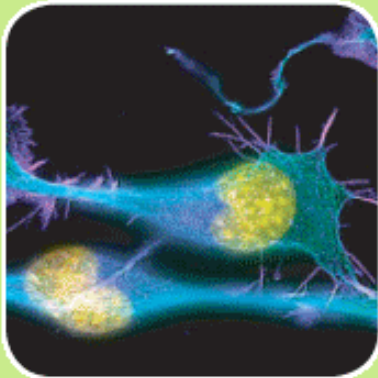
Understanding life processes
on a cellular level

Optical systems for drug
development

Optical systems for
regenerative medicine

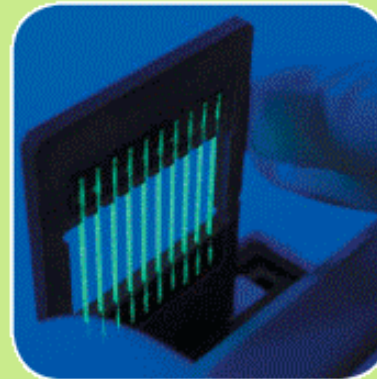
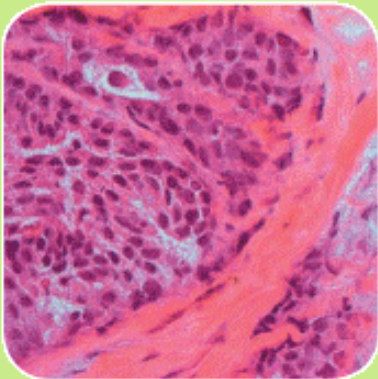
Improved environmental
monitoring

Life Science
Research



Food and
environment

Medical diagnostics
and therapy



Early diagnosis of cancer

Better understanding and
diagnosis of skin diseases

Point-of-care diagnostics

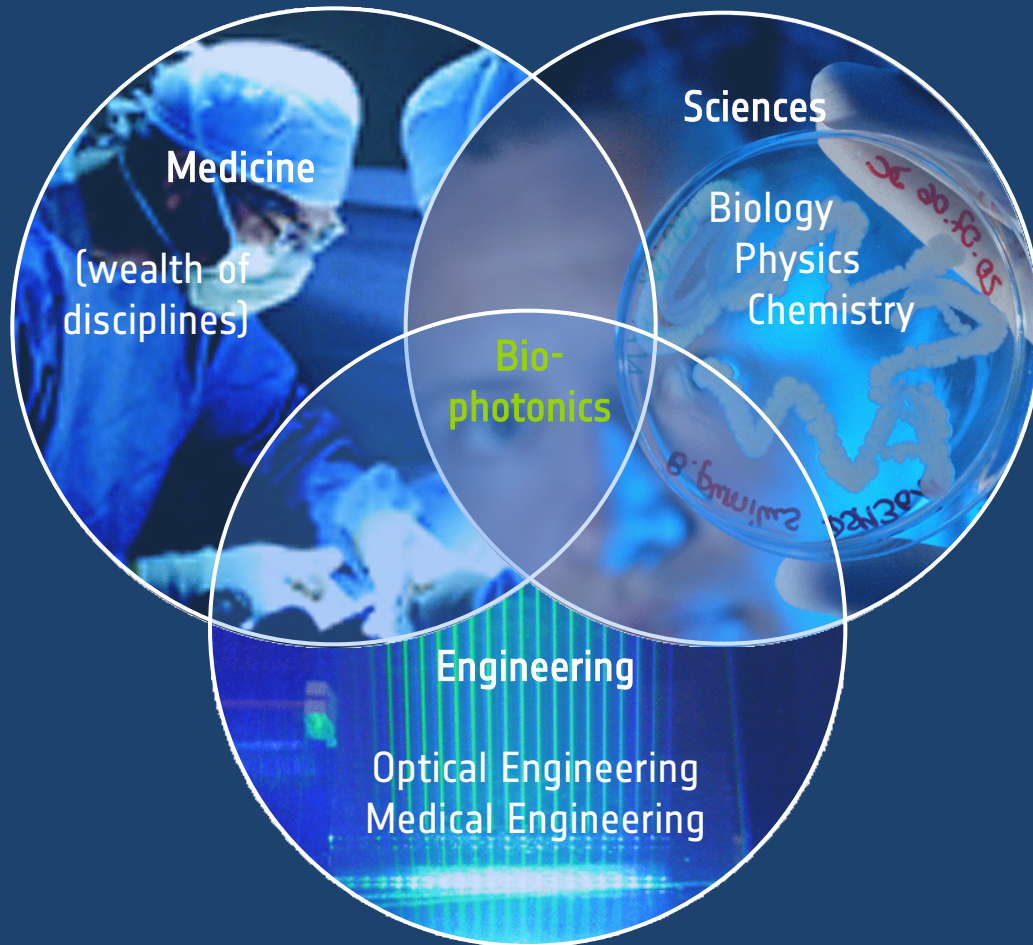
Minimally invasive medicine
and targeted therapies

The visions connected with Biophotonics research

- **Understanding** the origins and molecular mechanisms of diseases
- **Preventing** them, or at least diagnosing them early and precisely
- **Treating** them individually and specifically (Personalized Medicine)



Biophotonics requires a paradigm shift!



From a linear, technology-driven approach towards a holistic, user- and market-oriented approach.

Interdisciplinary research approach:

- Intensive exchange between physicists, chemists... and physicians
- Close collaboration in between hardware-developer and between hardware- and software-developer
- Close collaboration between industry and academia

Interdisciplinary education and further education

- Development of B/M-courses of Biophotonics
- Installation of Biophotonics graduate schools
- Developing of a program for further education of industrial scientists

Public and industrial outreach

photonic4life – Network of Excellence for Biophotonics

Overall aim of photonic4life:

Initiate paradigm shift, “bridge the gap” → Integrating the Biophotonics landscape in Europe

Main targets of photonic4life:

- Strengthen cooperation between developers and endusers
- Gain overview, find white spots
- Cross-linking between different clusters
- Education, dissemination, investigate gender issues
- Connect to end-users via conferences and workshops
- Connect to industry

Networking for Better Health Care

13 Core-Partners from 9 European countries

- 1 Institut für Photonische Technologien, **IPHT**
- 2 Universität Münster, **UoM**
- 3 Universiteit Twente, **MESA+**
- 4 Istituto di Fisica Applicata ›Nello Carrara‹, **CNR IFAC**
- 5 CNRS Institut d'Optique graduate school, **IOGS**
- 6 Vrije Universiteit Brussel, **VUB**
- 7 University of St. Andrews, **USTAN**
- 8 Imperial College London, **IMPERIAL**
- 9 Instituto de Cincias Fotonicas Barcelona, **ICFO**
- 10 Valtion Teknillinen Tutkimuskeskus, **VTT**
- 11 Karlsruher Institut für Technologie, **KIT**
- 12 Lunds Universitet, **ULUND**
- 13 Saratovskij Gosudarstvennyj Universitet, **SSU**



As an extremely broad field, 13 partners are not sufficient to cover and integrate the whole discipline:

- Local cluster partners **[84]**
- Associated partners **[12]**
- International Cooperation Partners **[4]**

Why a career survey in biophotonics ?

- **Women in biophotonics are under represented**
 - understand reasons for under representation
 - initiate measures to improve situation (as pioneer EU project)
 - realize measures in P4L
 - include all human capital in biophotonics

- **Starting point**
 1. analyse situation and define expectations
 2. review existing surveys
 - women in photonics (NEMO)
 - women in biomedical research
 3. prepare adequate career survey for women in biophotonics
 - work out adequate questions
 - prepare (internet survey) and analyze survey

Careers in optics and photonics Survey

Scope

- Careers in optics and photonics Survey
- Influence of gender

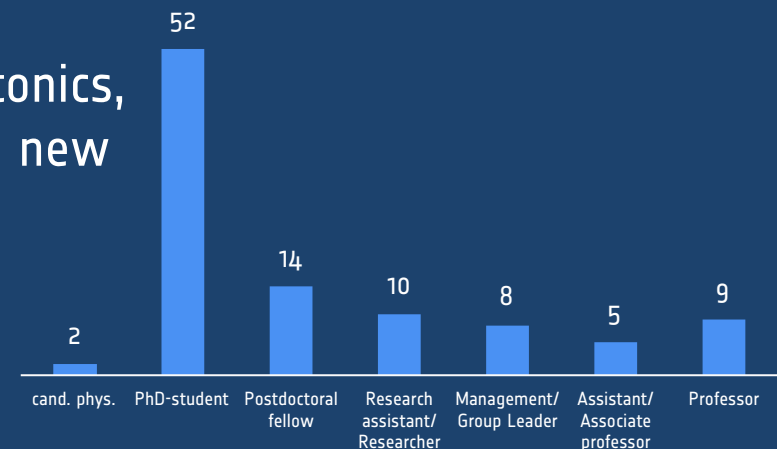
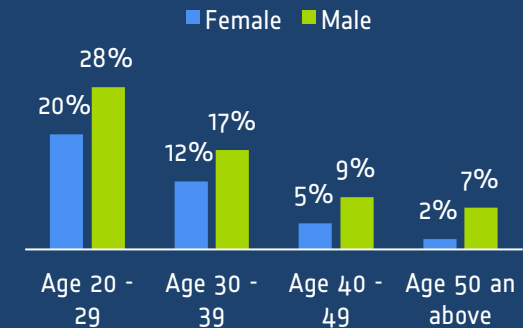
Methods

- Online Survey
- Survey Period: April – June 2011
- Respondents: Photonics4life members & non-members from academia and companies
- Photonics4life members: 52 respondents (36% of the registered P4L-members)
- 113 respondents
- scientist from 18 countries
- working in 12 different countries

Careers in optics and photonics Survey

Sample build-up

- Invitations were sent to P4L-members, companies of the Industrial User Club and Photonics21 WG3 members (~50% academia and 50% companies)
- 113 respondents
- 61% Men, 39% Women
- 80% are active in biophotonics (Other domains: photonics, non linear photonics, ultra short spectroscopy, non linear optics, new materials, ...)
- 5 interviewees are medical doctors
- 54% PhD-student/ cand. phys.
32% Postdoc/ Researcher/ Management
14% Professor



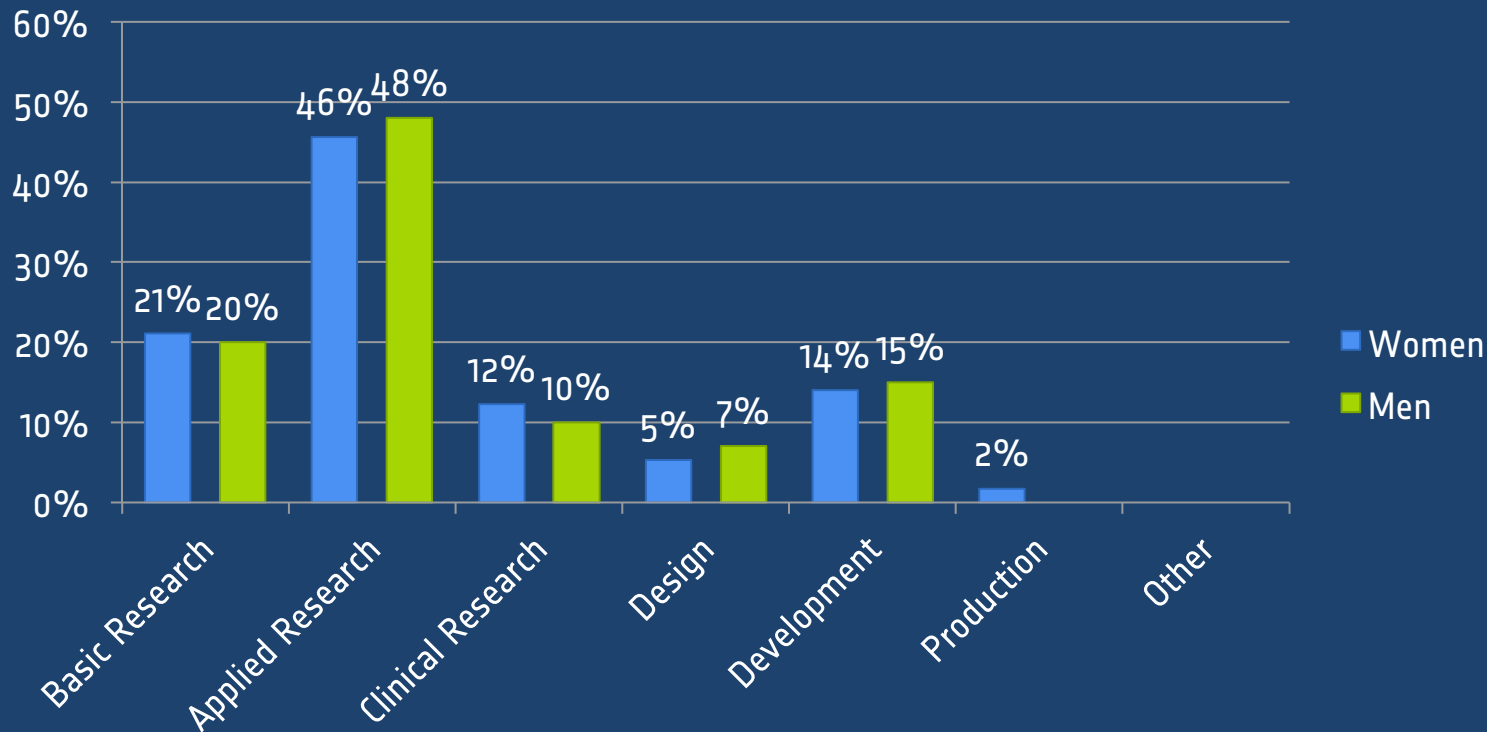
Careers in optics and photonics Survey

Themes of the survey

1. Current position
2. Career development
3. Ambition
4. Perceived discrimination
5. Working day
6. Job satisfaction and work values
7. Family situation

Careers in optics and photonics Survey

1. Current Position [I]

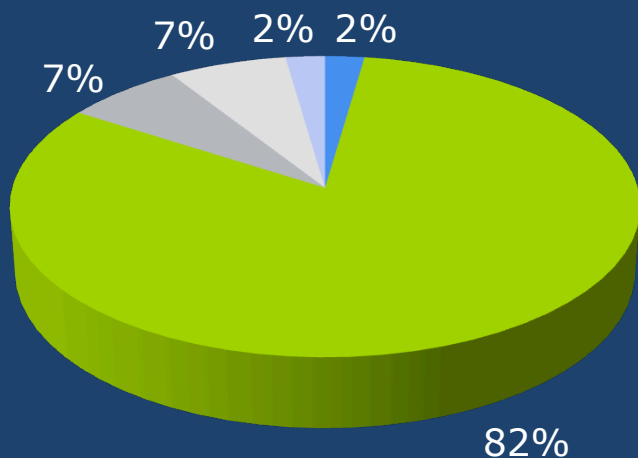


Most of the respondents are active in Basic and Applied Research, no significant gender specific differences.

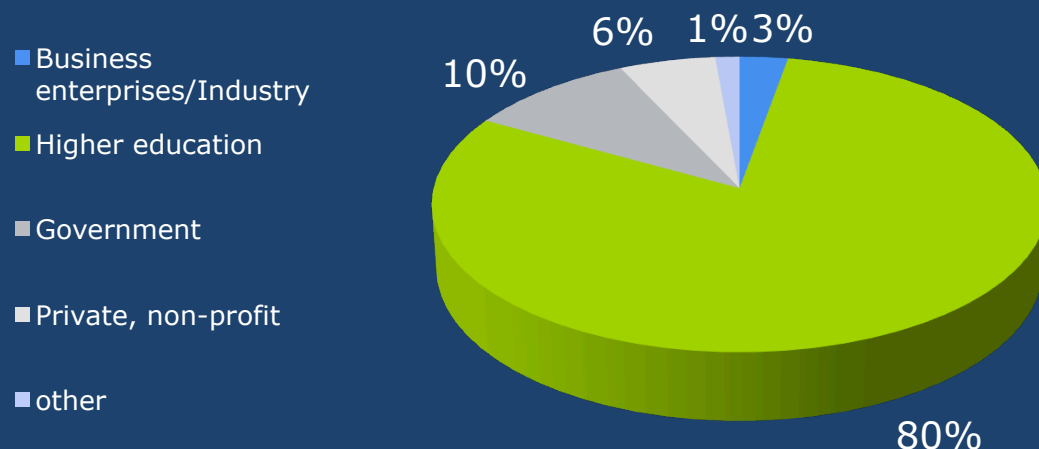
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1. Current Position (II)

Women



Men



Most of the respondents are employed in “higher education” with only minor contributions from other sectors.

Careers in optics and photonics Survey

1. Current Position (III)

Differences in contract and policy positions

- Full time/Part time
 - 57% of the women, 78% of the men work Full time
- Contract of unlimited duration
 - 20% of the women, 29% of the men
- Policy positions:
 - 71% of the women, 71% of the men have supervision power (over work of others)
 - 14% of the women, 22% of the men have decision power (over salary, promotion of others)

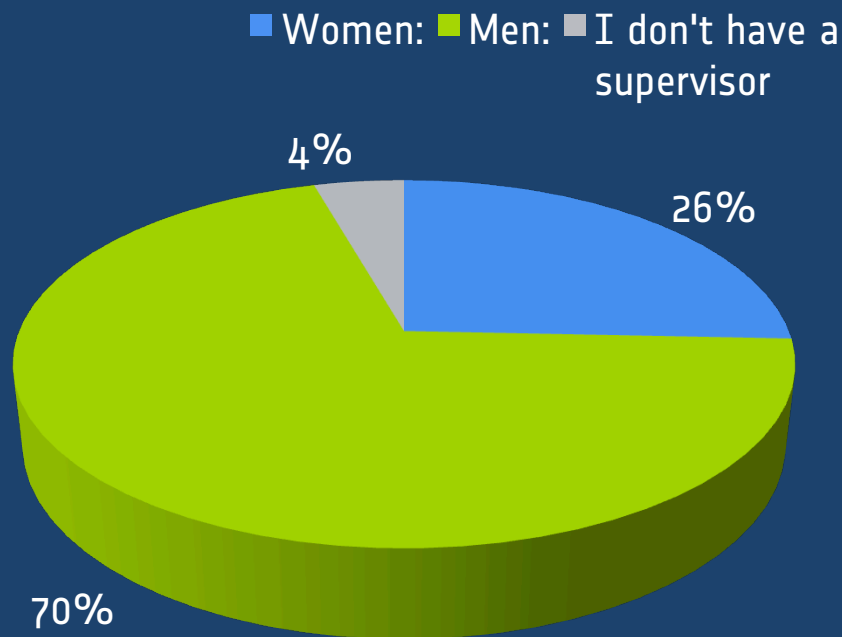
There has been strong support for the 'quota' instrument. Respondent proposed a minimum of 40% of women on all decision-making bodies.

Taken from: "Public Consultation on the Future of Gender and Innovation in Europe - Summary Report"

Careers in optics and photonics Survey

1. Current Position (IV)

- *Is your immediate supervisor/superior male or female?*



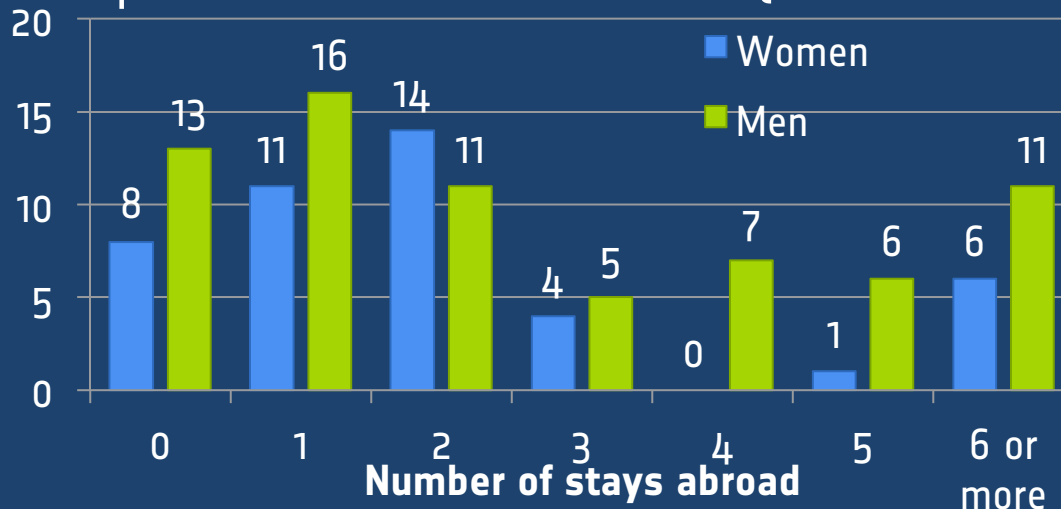
Most of the respondents have a male supervisor/superior.

Careers in optics and photonics Survey

2. Career Development (I)

- Interruptions in the career: **41% of women, 28% of men**
 - Women (mean 17 months): pregnancy leave
 - Men (mean 12 months): military service, unemployment, other

- Time spend abroad for a short term (less than a month):



Men tend to go much more on short term working visits than women

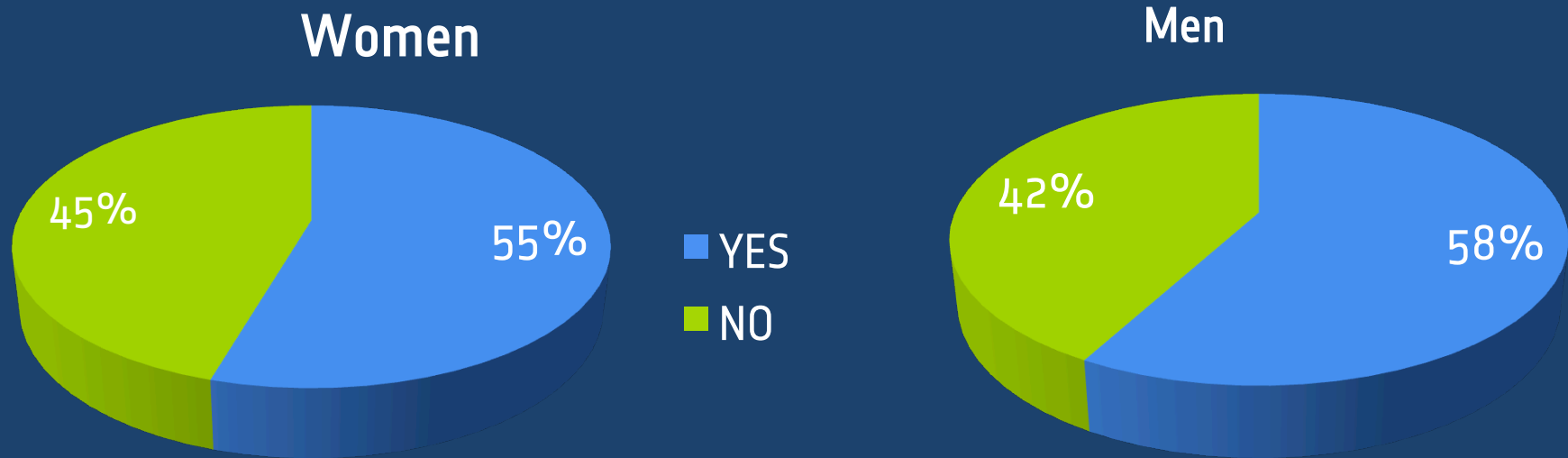
The grant system should include flexibility, to ensure people are not afraid of starting a family for fear of losing funding.

Taken from: "Public Consultation on the Future of Gender and Innovation in Europe - Summary Report"

Careers in optics and photonics Survey

2. Career Development (II)

- *Have you ever lived outside your native country?*



- 55% of women, 58% men have, for studies and professional reason
- BUT: women prefer to stay for shorter periods (mean 28 months vs. 33 months)

More than 55% of the respondents stayed or stay for a long period abroad

Careers in optics and photonics Survey

3. Ambition (I)

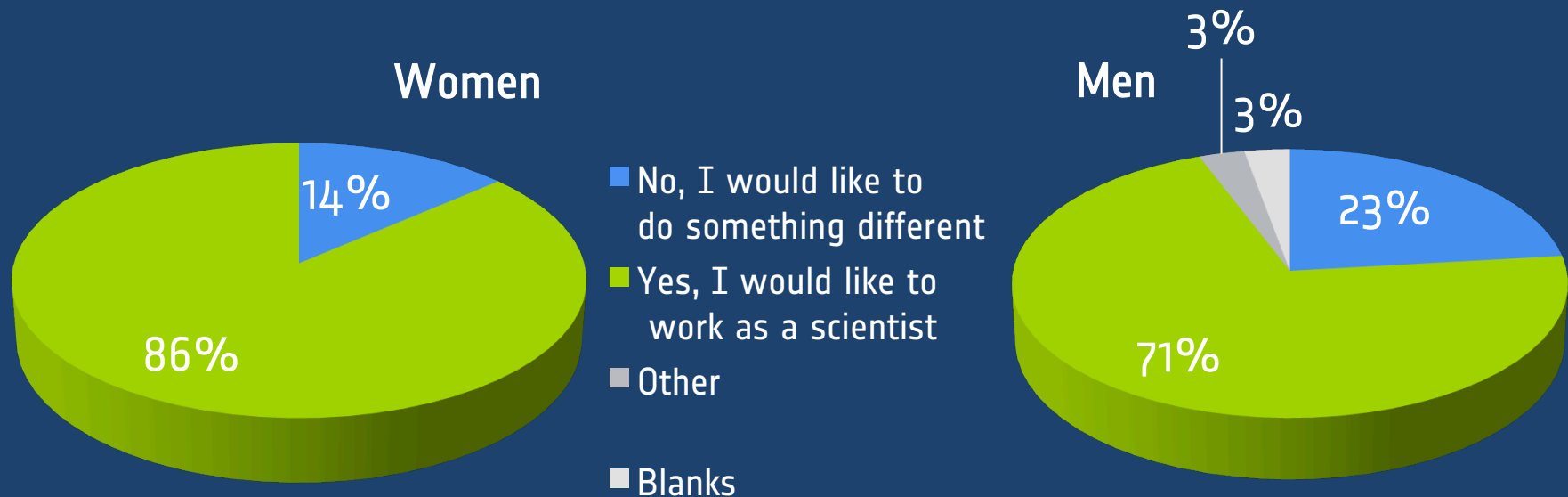
- Where would you like to be working within 5 years:
 - 86% of the women prefer a higher position (as first choice) which 35% prefer in same organization
 - 81% of the men prefer a higher position (as first choice) which 25% prefer in same organization
- Perceived chances for getting the job of first choice:
 - 52% of the women -> very high / high chance
 - 56% of the men -> very high / high chance
- 34% of the women/ 30% of the men will probably look for a new job in the next year

Women seem to be somewhat more self-critical, however once they have a certain position they become more ambitious. More than 30% will change jobs by next year.

Careers in optics and photonics Survey

3. Ambition (II)

- *Within 5 years, would you like to be still working as a scientist?*

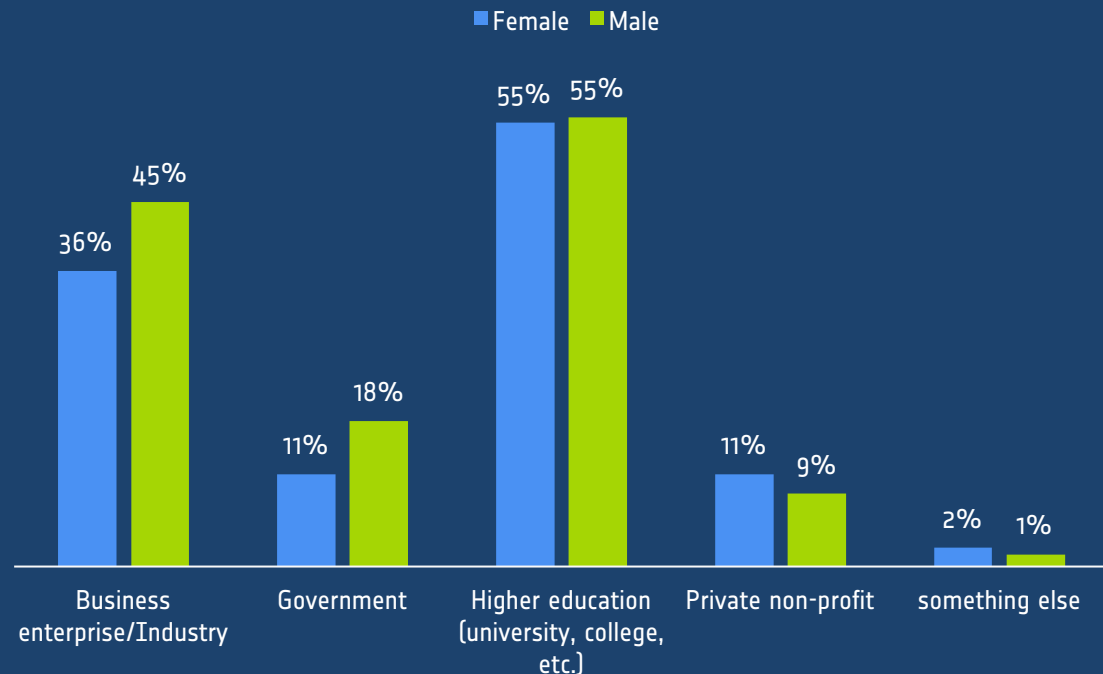


More than 70% of the men and 85% of the women would like to continue working as a scientist.

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3. Ambition (III)

- *Within 5 years, for what kind of organization would you like to be working?*



Men prefer working in industry or government positions.

Careers in optics and photonics Survey

4. Perceived Discrimination (I)

- *Did you encounter any discrimination in the workplace during your career?*

Respondents asked for clear and public standards concerning recruitment, appointment and promotion

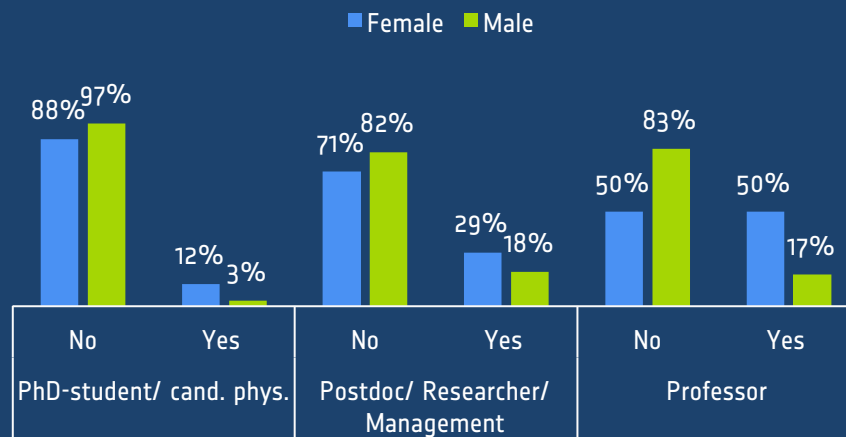


- 20% of women perceived discrimination, 10% of men
 - Promotion Opportunities
 - Salary

Careers in optics and photonics Survey

4. Perceived Discrimination (II)

- *Did you encounter any discrimination in the workplace during your career?*

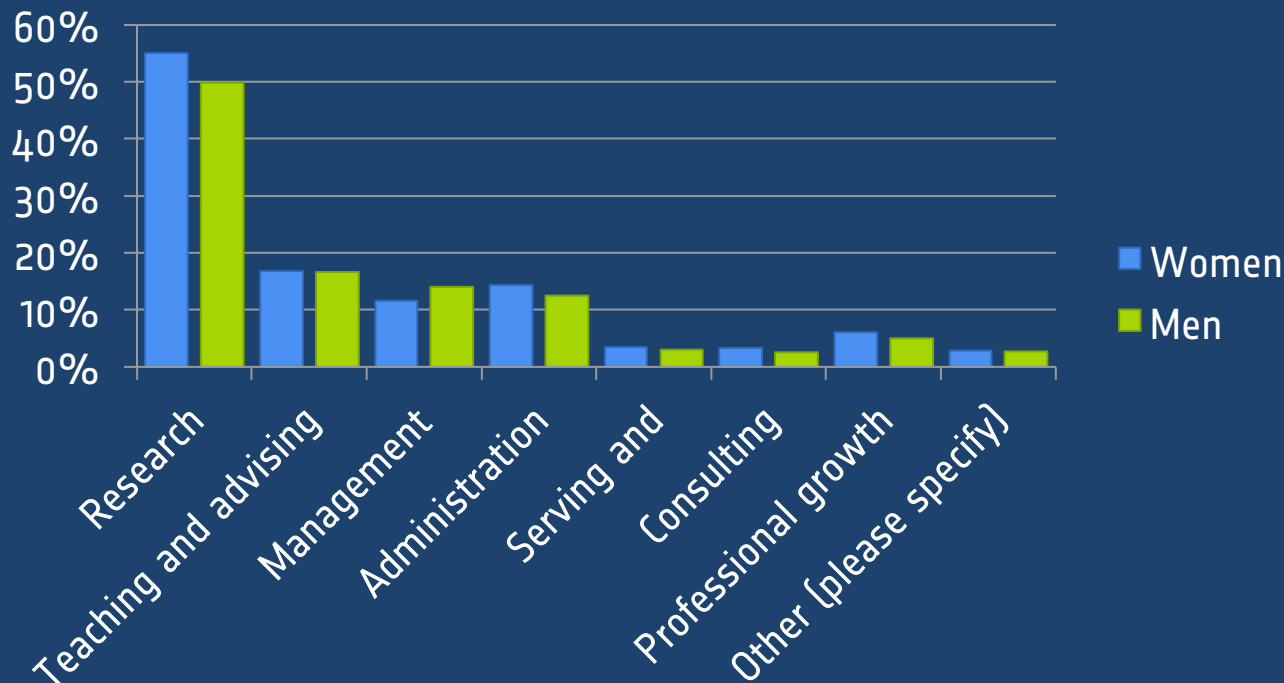


- 20% of women perceived discrimination, 10% of men
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Careers in optics and photonics Survey

5. Working day

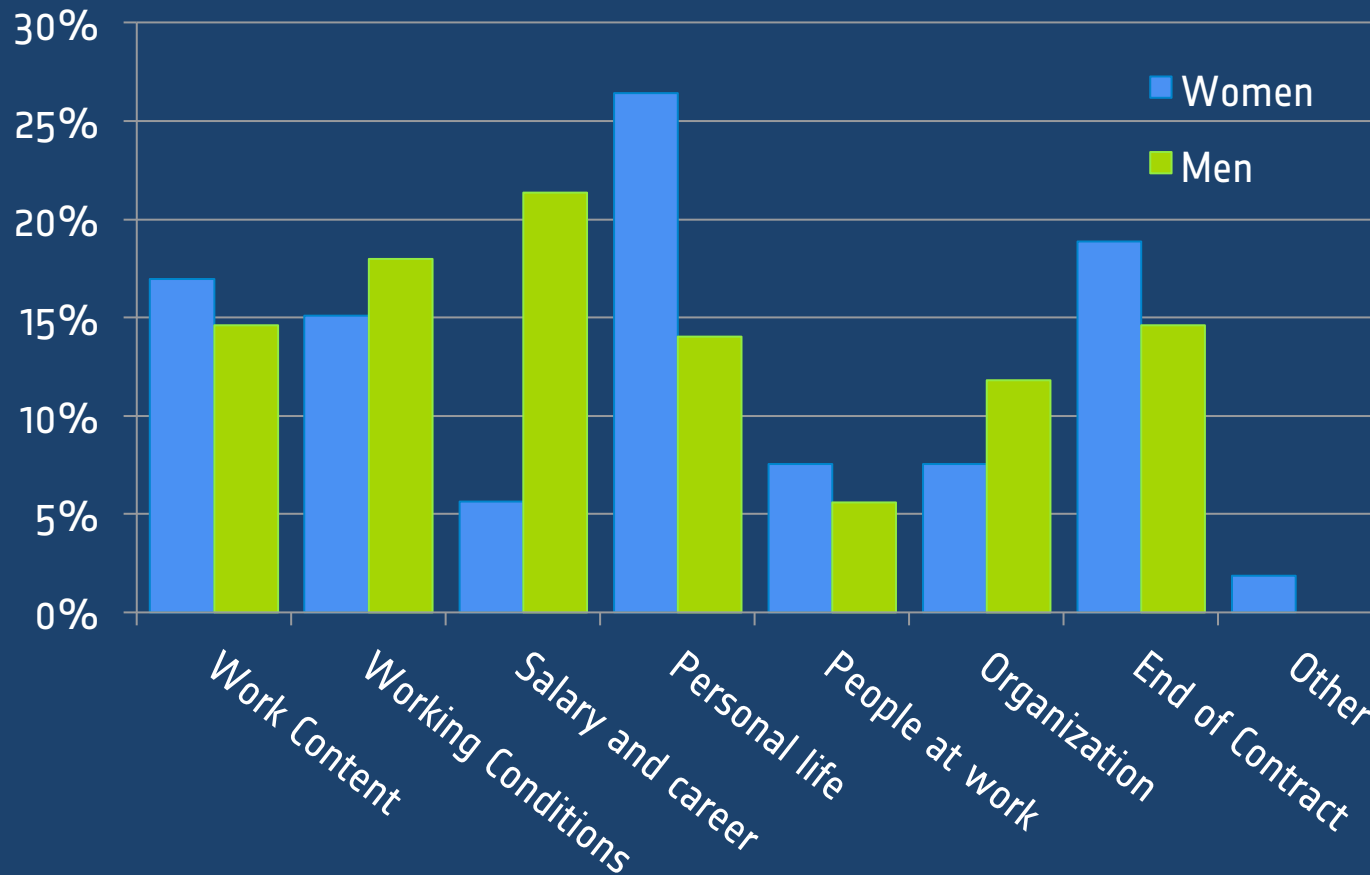
- Working hours: men work 48.8 hours/week, women work 47.4 hours/week
- Time allocation:



Careers in optics and photonics Survey

6. Satisfaction

- *Discouraging factors: reason to change job*



Careers in optics and photonics Survey

7. Family Situation

Family situation	Men	Women
Single without children	14%	21%
Single with Children	2%	
Couple without Children	48%	46%
Couple with Children	36%	33%

- Women spend on average 14 hrs/week on household activities, men on average 10 hrs
 - *Note: the partner of female respondents spend on average 15 hrs; the partner of male respondents 16 hrs on household activities*
- 25% of women, 25% of men make use of paid help in the household
- 20% of women, 17% of men make use of unpaid help in the household (parents/children/...)

Careers in optics and photonics Survey

8. Preliminary Conclusions (evaluation of data not yet completed)

- Women feel less sure about promotion and perceive more discrimination.
- More women prefer to stay within research/higher education while more men desire a job in industry/business.
- Work content and personal life seem to be the most important satisfaction parameters for women while men are encouraged by salary and career.
- Combining work/family is not perceived as an important obstacle, but influences the number of working hours.
- Women take more and longer interruptions in their career and travel for shorter periods abroad.
- **Awareness of building gender, lack of role models, and unequal opportunities are essential to enhance number of women entering and staying in the field**