

The current state of post-graduate training in Europe

Survey Data and Review of the Literature

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Introduction

- Europe and the European Union (EU)
 - Different under and post-graduate training programs
 - Differing also inside each country

- Post-graduate Programs in Pathology
 - Different duration
 - Different contents
 - Different examinations
 - “Equivalent” licence in the EU



Introduction – What is it like?

- Difficult to figure out
- Information for each country is not readily available online
- Legislation is opaque
 - Rarely in English
 - Is not an accurate description of reality
- Ask the residents themselves!
 - Surveys



Introduction – What is it like?

- 5 publications in the English literature
 - 2 are surveys
- Surveys
 - Bosman, Fred T., and Jan G. van den Tweel. "Unison or cacophony: postgraduate training in pathology in Europe." *Virchows Archiv* 454.5 (2009): 497-503.
 - Pehlivanoglu, Burcin, et al. "How does it feel to be a pathology resident? Results of a survey on experiences and job satisfaction during pathology residency." *Virchows Archiv* 471.3 (2017): 413-422.

Introduction – What is it like?

- 2 unpublished surveys
 - One in 2015 by the Harmonisation Section, lead by Eleftheria Lakiotaki, as part of the 1st Trainee Subcommittee of the ESP
 - One in 2018, an international cooperation between the 2nd Trainee Subcommittee of the ESP, Maria Urbanowicz (EORTC) and Bart Latten (BDIAP), supervised by Prof. Dr. Fred Bosman
- Round table discussion at the Maastricht Conference 2018
- 1 unpublished survey done in 2019 regarding sub-specialization
 - By the trainee subcommittee
 - Under supervision of Prof. Dr. Serpil Sak

Review of the Literature

Virchows Arch (2009) 454:497–503

DOI 10.1007/s00428-009-0746-6

ORIGINAL ARTICLE

Unison or cacophony: postgraduate training in pathology in Europe

Fred T. Bosman • Jan G. van den Tweel

“Unison or Cacophony”

Results

- High response rate
 - 26 of 30 countries where it was sent out
 - 8 countries provided detailed online documentation on training programs
- Program duration
 - Between 4 and 6 years
 - In most, duration is 5 years
 - 8 countries required clinical training
 - Between 6 and 12 months
- Courses
 - Obligatory in 20 countries
 - 8 countries without minimum number of hours
- Practice requirements
 - Remarkable heterogeneity
 - No minimum numbers in 6 countries
 - Evaluation by final examination or program director

“Unison or Cacophony”

Results

- Autopsies
 - Between 60-300 are required
 - Including fetal autopsies
 - 2 countries: almost no need for autopsy practice
- Biopsies
 - Between 600 and 15000 are required, most not by area
- Cytology
 - Between 500 and 10000 are required
- Frozen sections
 - In many countries: not performed by trainees
 - In others: between 50 and 500 required
- Laboratory technique
 - 14 countries require some practice in histopathological technique, 12 in IHC as well, 7 in EM, 5 in morphometry, **5 in molecular pathology, 3 in FISH**

“Unison or Cacophony”

Results

- Examination
 - Most countries require an examination
 - Six without final examination
 - Director of the training program bears full responsibility
 - Many countries with practice oriented content
 - **Including grossing** in 9 countries
 - **Autopsy** examination (report and or slides) in 9 countries
 - **Cytology slides** in 16 countries and histology slides in 18 countries
 - **Multiple choice questions** in 8 countries, open questions in 13 countries
 - **Oral examination** in 2 countries

“Unison or Cacophony”

Results

- Research
 - 9 countries require active participation in a research project
 - 4 countries require a published paper
- Trainee selection
 - National examination with seriation
 - Curriculum evaluation by program directors
- Grossing
 - **In 9 countries, trainees gross specimens for which they do not see the microscopy**

“Unison or Cacophony”

Discussion

- Harmonization of training was a priority of UEMS for 20 years
 - Implementation in national programs largely failed

We must conclude that harmonization of training programs is an illusion and should no longer be pursued.

examinations, etc.

- Adequate autopsy practice is not ensured across Europe
- Curricula lack adaptation to new realities (eg. Molecular pathology)
- Examinations vary tremendously between countries

Review of the Literature

Virchows Arch
DOI 10.1007/s00428-017-2167-2



CrossMark

ORIGINAL ARTICLE

How does it feel to be a pathology resident? Results of a survey on experiences and job satisfaction during pathology residency

Burcin Pehlivanoglu^{1,2} • Hur Hassoy³ • Catarina Calle⁴ • Amelie Dendooven⁵ • ILKe Nalbantoglu⁶ • Lidiya Reshchikova⁷ • Gulen Gul⁸ • Basak Doganavsargil¹

“How does it feel to be a pathology resident?”

- More focused on quality of life, job satisfaction and perception of pathology than training conditions
- 222 respondents from 25 countries
- Some **results** are pertinent:
 - Most respondents were in university hospitals
 - A core curriculum, annual scientific curriculum and program director existed for 58.2, 60,1 and 69,2% of respondents, respectively
 - Core and scientific curriculums were more common in high-income countries ($p < 0,01$), as was higher numbers of teaching staff ($p < 0,001$)

“How does it feel to be a pathology resident?”

Results

- 46% of respondents found their scientific program insufficient
 - 41% found their scientific activity insufficient
- 51% of respondents said they were well trained in grossing, 62% in microscopy, but only 43% in their theoretical training
- 76% reported they had access to textbooks, recent articles and publications

Review of the Literature

SURVEY ABOUT RESIDENTS' TRAINING THROUGHOUT EUROPE

ESP Trainee Subcommittee

Harmonisation Subdivision

Eleftheria Lakiotaki, MD

Greece

Survey about residents' training

- 285 responses from 33 countries
- Responses from 16+ countries
- Most respondents between 26-30 years
 - 189 female, 89 male

Survey about residents' training

Results

- Institutions
 - Mostly University Hospitals
 - Average of 8 trainees per institution
- Program duration and organization
 - Duration between 2 and 6 years
 - Most programs lacked mandatory clinical practice
 - Most programs were structured with rotations
 - Most trainees had an educational supervisor

Survey about residents' training

Results

- Overall training conditions
 - A significant part of respondents (nearly a third) lacked access to their own microscope
 - Most trainees had access to bibliography
 - 46 hours of work per week (average)
 - 241 cases examined per month (average)
- Frozen sections
 - Most residents have access to frozen sections and participate in them in supervised fashion

Survey about residents' training

Results

- Autopsies, cytology and histology
 - Trainees are involved in preparing the autopsy report which is finalized by the supervisor
 - Cytology is a part of training for the majority of trainees
 - Respondents were asked how many exams of each type they had performed so far, so it's hard to make sense of the data
- Research
 - A majority feels encouraged to participate in research
 - More common in university hospitals

Survey about residents' training

Results

- Courses and seminars
 - Most are encouraged to participate
 - At their own cost (>40%)
 - Others with bursaries, sponsors, education funds

- Subspecialty training
 - Trainees mention a lack of experience in Neuropathology, Nephropathology, Pediatric pathology and molecular pathology
 - Most countries without subspeciality fellowship programs

Survey about residents' training

Results

- Examination
 - Diagnostic test on slides, test on theoretical knowledge, some with autopsy reports as well

Over half of trainees were not satisfied with their salaries

Review of the Literature

STANDARDS OF TRAINING IN PATHOLOGY ACROSS EUROPE: RESULTS FROM AN INTERNATIONAL SURVEY

Pinto D, Urbanowicz M, Latten BGH, Bosman FT



Maastricht Pathology 2018

Maastricht Exhibition and Congress Centre
The Netherlands
19 - 22 June 2018



“Standards of Training”

Results

- 145 responses from 20 countries
- Personal and institutional background
 - Most trainees were from University hospitals
 - Most in the 4th year of residency
 - Duration: between 4 and 6 years

“Standards of Training”

Results

- Program and training conditions
 - Most working >43 hours / week (average 43,8 hours)
 - Most programs were structured
 - But nearly a third were defined at a local level, and almost half of the others were modified at the institution level
- Histopathology
 - Between 917 and 4325 cases / year (average)
- Cytology
 - Between 82 and 1192 cases / year (average)

“Standards of Training”

Results

- Autopsies
 - Between 8 and 122 / year (average)
- Frozen sections
 - Between 8 and 204 / year (average)
- Subspecialty training
 - Trainees feel training is inadequate in Autopsy pathology, nephropathology, neuropathology, cytopathology and fetal pathology
 - Half or more feel they receive inadequate training in Molecular pathology, Infectious pathology and Electron Microscopy

“Standards of Training”

Results

- Grossing
 - Most trainees spend 10 or more hours per week grossing
 - Nearly 70% don't see some or all histology of the specimens they gross
- Funding
 - Most trainees (55%) have funding from conferences
 - But those that don't come from low-income countries
- Examination
 - Most: Theoretical test, practical test, curriculum evaluation
 - Some: Autopsy test
 - Some: No formal evaluation
 - Rare: Presentation of a thesis

“Standards of Training”

Results

- Subspecialization
 - Majority (>60%) say there is no separate examination for sub-specialties
- European examination
 - 50% say there would be an advantage to an European examination vs. 33% who say there wouldn't be
 - Most believe it should be optional
 - And available to anyone around the world, enabling them to practice in Europe

Four surveys – Conclusions

- The four surveys analyzed overlap significantly in their findings
 - Despite being done years apart and with different cohorts
- Most trainees are in University hospitals; residency duration varies a lot between countries
- There are significant differences in the number of cases observed, in total and per area
- Programs are structured very differently from country to country, sometimes from institution to institution

Four surveys – Conclusions

- In several areas, most shockingly, molecular pathology, trainees feel they receive inadequate training
- The number of autopsies is overwhelming in some countries and largely insufficient in others
 - In low volume countries: rotations in specialized centers? Division of autopsies per region? (**Maastricht round table**)
- Subspecialty training is insufficient, particularly for neuropathology, nephropathology, pediatric / fetal pathology and molecular pathology

Four surveys – Conclusions

- Trainees spend overall too much time grossing
 - Many don't see the slides of the specimens they gross
 - “Trainees as labor”
 - Also happens for autopsies in large volume countries
 - Standardization of grossing by lab technicians as solution? (**Maastricht round table**)
- Examinations are comprised of theoretical written tests, oral tests, curriculum evaluations, practical tests on slides and autopsy tests
 - Some countries have all of these, some only a few, some have none
 - Number of diagnosis also vary significantly between countries
 - All are allowed to practice in any country if certified in the EU

Four surveys – Conclusions

- Theoretical training is lacking in Europe (data from one survey)
- Financial support is heterogeneous and worse in low-income countries
- Evaluation varies a lot, and a significant number of trainees lack formal examination
- An European examination is seen as advantageous
 - Perhaps it is a way to force a “convergent evolution” of training programs, by homogenization of training outcomes (**Maastricht round table**)

Subspecialty survey

Introduction and methods

- To evaluate opinions and realities of sub-specialization in Europe
- Sent out to both trainees and pathologists
- Through several national societies
- Open for two weeks

Subspecialty survey

Results

- 262 responses
- From 8+ countries: Austria, Germany, Ireland, Portugal, Romania, Spain, Turkey, the United Kingdom, the Netherlands and others (n=1 each)
- Good distribution of residents and specialists
 - A minority were first year residents

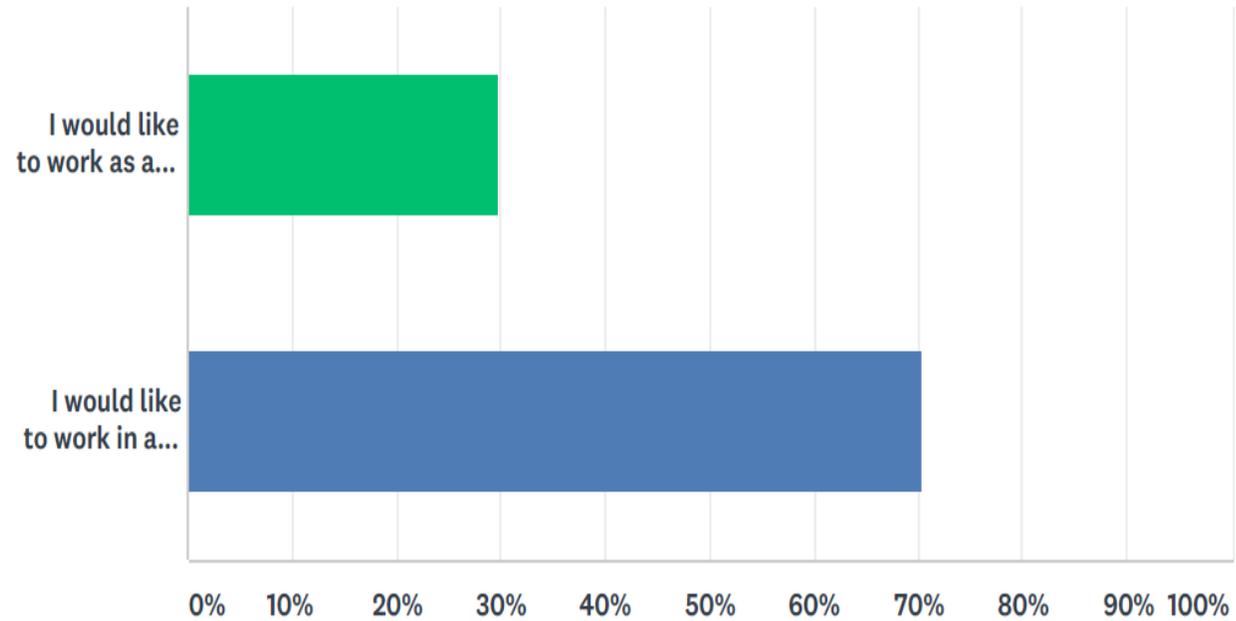
Q1 How long have you been practicing pathology?

Answered: 262 Skipped: 0

ANSWER CHOICES	RESPONSES	
I am a first year resident.	6.49%	17
I am a resident (not on the first year).	36.26%	95
I am a specialist for less than 5 years.	18.32%	48
I am a specialist for more than 5 years.	38.93%	102
TOTAL		262

Q4 What is your preference related with your work as a pathologist?

Answered: 262 Skipped: 0



ANSWER CHOICES	RESPONSES	
I would like to work as a general pathologist.	29.77%	78
I would like to work in a small defined area/ areas of pathology.	70.23%	184
TOTAL		262

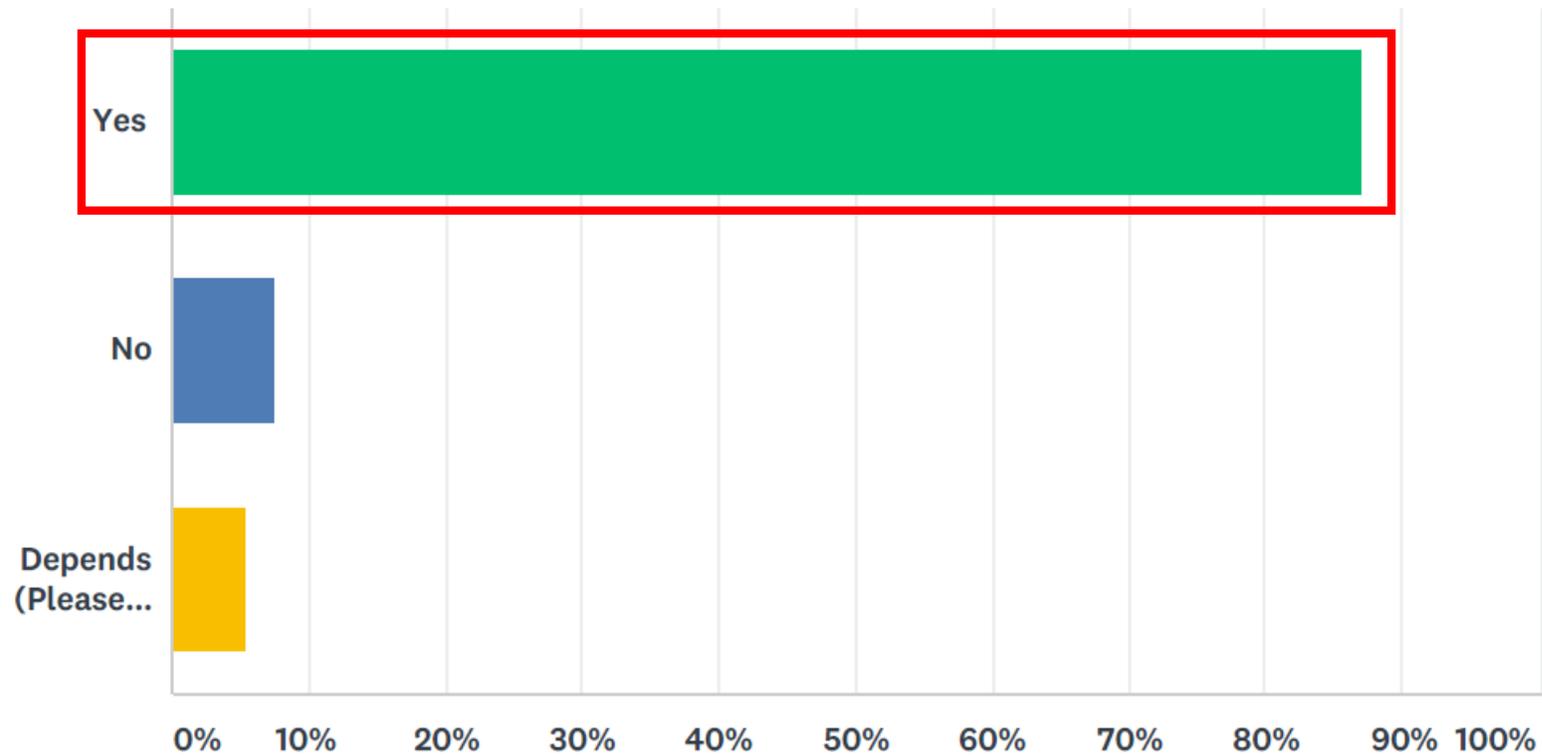
Q5 What is the dominant way that is currently used by you (and/or the residents/specialists around you), when you want to deepen your knowledge in a particular area of pathology ?

Answered: 262 Skipped: 0

ANSWER CHOICES	RESPONSES	
European congresses and EScoP courses	11.07%	29
Courses/meetings held within my country of residence/ neighboring countries	49.24%	129
Courses/meetings held outside Europe (such as USA)	6.11%	16
Rotation to an expert center	30.15%	79
Other (Please explain)	3.44%	9
TOTAL		262

Q6 Would you dedicate (more of) your time and energy for a subspecialty education program if it was (more readily) available in your environment?

Answered: 262 Skipped: 0



Q7 (If your answer is YES or DEPENDS for the previous question, please answer this question; if not you can skip this one.) Why do you think you need subspecialty education? Please classify each of the following statements according to their importance to you.

	VERY IMPORTANT	IMPORTANT	NOT/LESS IMPORTANT	TOTAL	WEIGHTED AVERAGE
Quality of my work will improve, with a deeper knowledge of a specific area.	84.73% 222	12.98% 34	2.29% 6	262	1.18
I will be able to find a better payed job.	15.71% 41	38.31% 100	45.98% 120	261	2.30
I will be able to find a professionally more rewarding job.	39.08% 102	42.91% 112	18.01% 47	261	1.79
I will be able to do research in the area	53.64% 140	26.44% 69	19.92% 52	261	1.66
Pathologists trained in a special area, will be able to dominate in some technical fields (eg. Molecular, digital) rather than other specialists.	55.34% 145	33.21% 87	11.45% 30	262	1.56

Q8 Which areas of pathology do you think should be a subspecialty ? (Please mark only three boxes)

Autopsy Pathology	16.03%	42
Breast Pathology	10.31%	27
Cytopathology	25.95%	68
Dermatopathology	28.63%	75
Digestive Diseases and Liver Pathology	7.25%	19
Electron Microscopic Pathology	11.83%	31
Endocrine Pathology	2.29%	6
Gynaecological Pathology	9.16%	24
Haematopathology	48.47%	127
Head and Neck Pathology	2.29%	6
IT (Computational) Pathology	9.92%	26
Molecular Pathology	33.21%	87
Nephropathology	12.60%	33
Neuropathology	32.44%	85
Paediatric and Perinatal Pathology	15.27%	40
Pulmonary and Mediastinal Pathology	3.05%	8
Soft Tissue and Bone Pathology	13.74%	36
Uropathology	2.67%	7
Other (Please specify)	3.05%	8

Q9 What is the subspecialty area that is more appealing to you? (Please mark only three boxes)

Autopsy Pathology	8.40%	22
Breast Pathology	24.81%	65
Cytopathology	12.21%	32
Dermatopathology	22.14%	58
Digestive Diseases and Liver Pathology	23.28%	61
Electron Microscopic Pathology	1.53%	4
Endocrine Pathology	5.73%	15
Gynaecological Pathology	22.90%	60
Haematopathology	29.01%	76
Head and Neck Pathology	7.63%	20
IT (Computational) Pathology	10.69%	28
Molecular Pathology	32.06%	84
Nephropathology	7.63%	20
Neuropathology	10.31%	27
Paediatric and Perinatal Pathology	4.58%	12
Pulmonary and Mediastinal Pathology	12.60%	33
Soft Tissue and Bone Pathology	9.54%	25
Uropathology	15.65%	41
Other (Please specify)	1.91%	5

Q10 Do you think digital pathology can be a structured part of specialty and/or subspecialty education?

ANSWER CHOICES	RESPONSES	
Yes, it can and should be.	51.91%	136
Yes, but only playing a small part (eg. limited/optional rotation or included in daily practice, if available).	33.59%	88
No, I don't think so.	14.50%	38
TOTAL		262

Q11 Do you think digital pathology should be considered an area of sub-specialization in pathology?

ANSWER CHOICES	RESPONSES	
Yes, it is so vast and specific for a general pathologist.	9.54%	25
Yes, but the basics should be common knowledge for every pathologist.	37.79%	99
No, it does not merit sub-specialization; it is just a different way of organizing the workflow.	52.67%	138
TOTAL		262

Q12 Do you think molecular pathology should be a structured part of a subspecialty program in all areas of pathology ?

ANSWER CHOICES	RESPONSES	
Yes, it should be.	75.57%	198
Yes, but only playing a small part (interpretation of laboratory results).	22.14%	58
No, molecular pathology is for molecular pathologists.	2.29%	6
TOTAL		262

Q13 What should be the length and organization of training in a subspecialty area?

ANSWER CHOICES	RESPONSES	
6 months-1 year training in a specialized center	41.60%	109
1-2 years training in a specialized center.	46.56%	122
It can be given as on-line courses/exams ; enriched by a number of hands-on requirements/rotations.	10.69%	28
Other (please explain)	1.15%	3
TOTAL		262

Q14 Do you think recertification is necessary in a given subspecialty area?

ANSWER CHOICES

RESPONSES

No, once a subspecialist, always a subspecialist.

42.37%

111

Yes, once in every 5 years.

37.02%

97

Yes, once in every 10 years.

20.61%

54

TOTAL

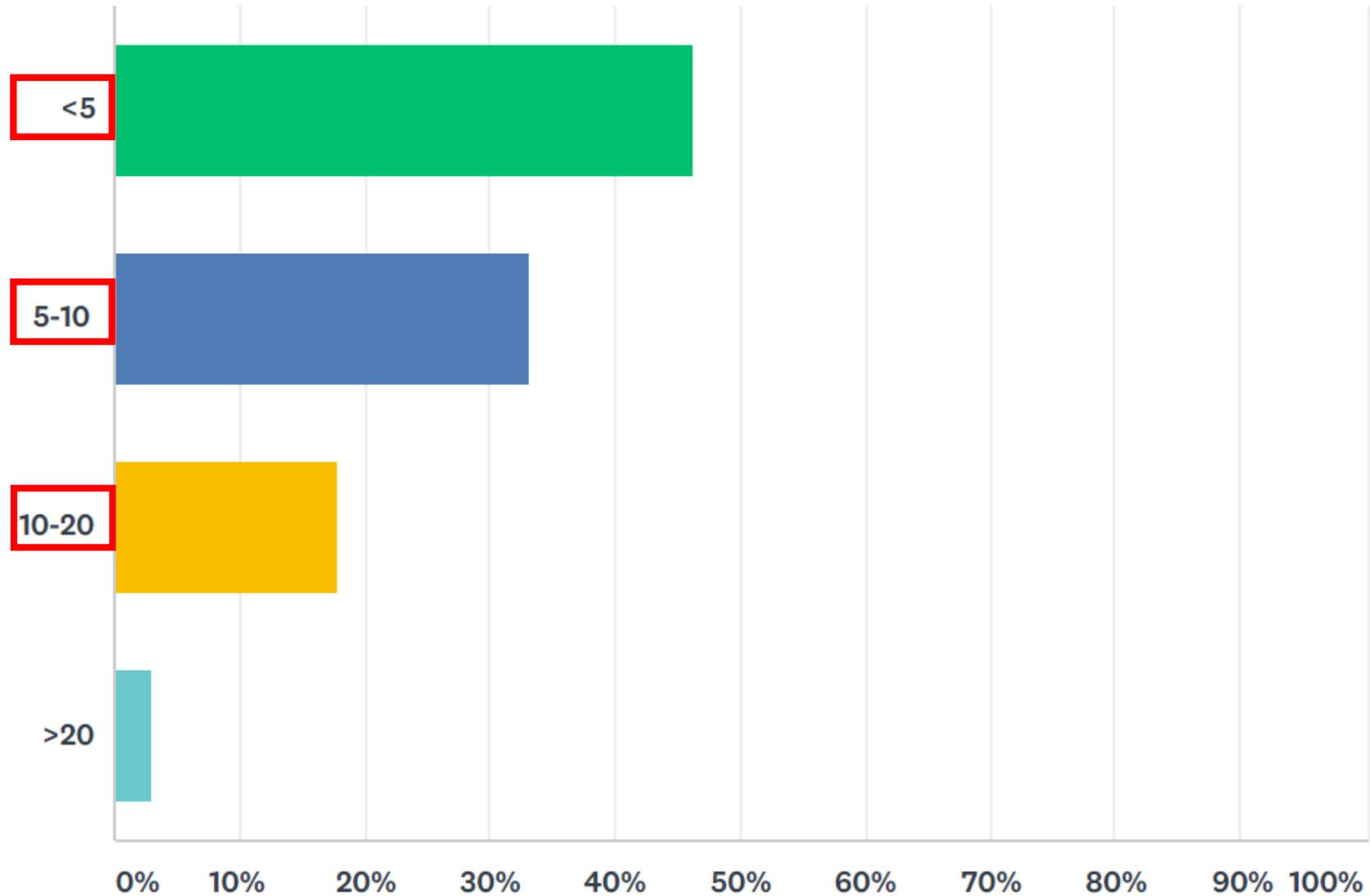
262

Q15 Who should be responsible for certification and re-certification for sub-specialty in pathology?

ANSWER CHOICES	RESPONSES	
Responsible national body	55.34%	145
Responsible international body (eg. UEMS)	28.63%	75
ESP	14.89%	39
Other (Please specify)	1.15%	3
TOTAL		262

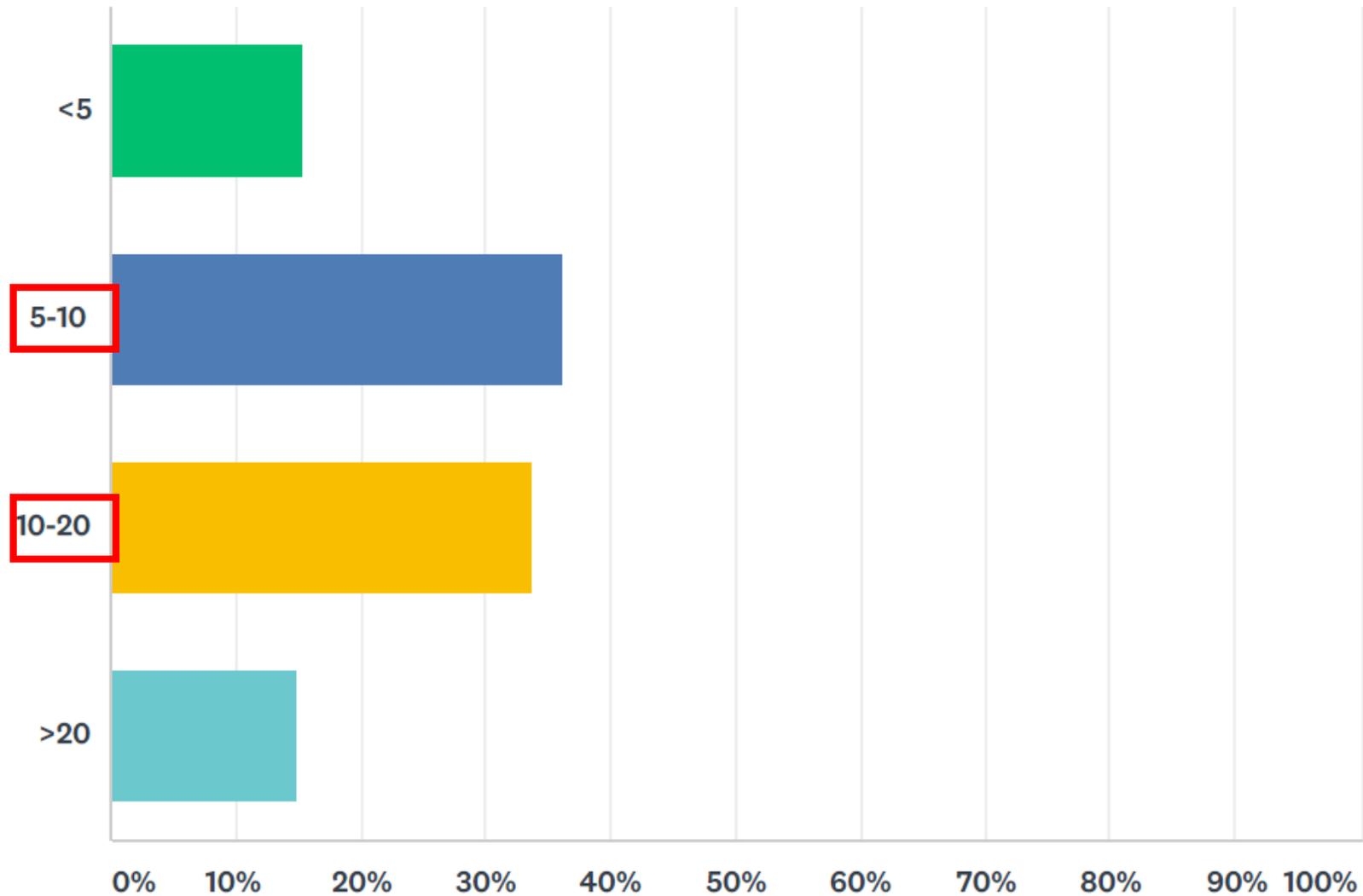
Q17 How many pathology trainees work in your department?

Answered: 236 Skipped: 26



Q18 How many pathologists (excluding trainees) work in your department?

Answered: 237 Skipped: 25



Subspecialty survey

Results – Summing it up

- >70% would like to work in one or few specific areas of pathology
- Most use conferences / courses in their own countries to stay up to date
 - A significant percentage chooses to do internships abroad
- >85% would dedicate more time to sub-specialization if conditions allowed
 - A culture that promotes sub-specialization is essential!
- Pathologists want to subspecialize do better at their work, have more rewarding jobs and for research

Subspecialty survey

Results – Summing it up

- >75% believe Molecular Pathology should be part of post-graduate training programs
- Sub-specialization should be done in a fellowship-like model and take between 6 months and 2 years
- Most departments are medium sized
 - <10 residents
 - <20 pathologists
 - **Along with financial hurdles, probably one of the largest hindrances to sub-specialization!**

Thank you for the data shower! But what does it all mean?



Conclusions

- Undergraduate training is severely heterogeneous between European countries
- Work conditions also differ significantly
 - Workload, time at work, access to materials and techniques, funding, etc.
- We work in small to medium sized laboratories, which makes sub-specialization hard and hinders expertise and research opportunities
- But we want to do better!

Conclusions

To do better: **More than routine!**

- Organize locally, nationally, find common ground with other pathologists
 - Engage trainees!
- Cooperate internationally
 - Import best practices – no need to “reinvent the wheel”
- **The ESP is a fantastic forum**
 - ESP Advanced Training Centers
 - Giordano Fellowship
 - ESP Academy
 - ESP School of Pathology
 - ESP Education portal (e-learning courses / webinars/more to come soon!)

Together we can build a better future
for pathology!



Thank you for your time and
attention!