

Future research demands of the UEG and its member societies

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Abstract:

To initiate and stimulate collaborative research efforts to support UEG member societies facilitating digestive health research in Europe on the one hand, and to increase EU funded digestive health research by providing evidence and advice to funding bodies on priority areas on the other, the UEG Research Committee initiated a survey of the current and future research interests of each individual UEG Ordinary Member Societies (specialist societies). **Methods:** A questionnaire was sent by mail to 17 UEG ordinary member societies asking to specify research demands related to the most urgent medical need including basic science research, translational research, clinical research, patient management research and research on disease prevention, in an open fashion, but with limited word count. **Results:** The responses from 13 societies were analyzed in a semi-quantitative and in a qualitative way, and were clustered into 5 domains with two aspects each that were consented and shared between 3 and 7 of the responding 13 societies. These clusters resemble topics such as "Hot Topics" (e.g. life-style, nutrition, microbial-host interaction), Biomarkers (genetic profiling, gut-brain interaction), Advanced Technology (artificial intelligence, personalized medicine), Global Research Tools (bio-banking, EU trials), and Medical Training (education, prevention). **Conclusion:** The generated topic list allows both collaboration between individual specialist societies as well as initiating and fostering future research calls at the EU level and beyond when approaching stakeholders.

Abbreviations:

ASNEMGE, Association of National European and Mediterranean Societies of Gastroenterology; EAES, European Association of Endoscopic Surgery; EAGEN, European Association of Gastroenterology, Endoscopy, and Nutrition; EASL, European Association for the Study of the Liver; ECCO, European Crohn's and Colitis Organisation; EDS, European Digestive Surgery; EFISDS, European Federation International Society for Digestive Surgery; EHMSG, European Helicobacter and Microbiota Study Group; EPC, European Pancreatic Club; ESCP, European Society of Coloproctology; ESDO: European Society of Digestive Oncology; ESGAR, European Society of Gastrointestinal and Abdominal Radiology; ESGE, European Society of Gastrointestinal Endoscopy; ESNM, European Society of Neurogastroenterology and Motility; ESP, European Society of Pathology; ESPCG, European Society for Primary Care Gastroenterology; ESPEN, The European Society for Clinical Nutrition and Metabolism; ESPGHAN, European Society for Paediatric Gastroenterology, Hepatology and Nutrition

AI, artificial intelligence; ENS, enteric nervous system

Introduction

The vast majority of European medical associations started as an assembly of national societies of the same subspecialty (e.g. gastroenterology, cardiology, rheumatology etc.) but display a much higher diversity not only due to the heterogeneity of languages across Europe. They tend to organize themselves as "umbrella organizations" focusing on harmonization, training and education, while leaving research initiatives mostly in the hands of either national societies or subspecialty societies. This is not different in the United European Gastroenterology (Federation) (UEG) that was founded in 1992 by the "Seven Sisters": Association of National European and Mediterranean Societies of Gastroenterology (ASNEMGE), European Society of Gastrointestinal Endoscopy (ESGE), European Association of Gastroenterology, Endoscopy, and Nutrition (EAGEN), European Association for the Study of the Liver (EASL), European Federation International Society for Digestive Surgery (EFISDS), European Pancreatic Club (EPC), European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) (1).

However, already from the very beginning the situation in European gastroenterology was quite different from the situation in other medical specialties. Gastroenterology, being organ based, was already split in 7 subspecialties that have increased subsequently by another 10 "sister societies" (Table 1), representing different aspects of medical and surgical gastroenterology, including clinical, research as well as education angles. In fact, many - but not all - of the sister societies (e.g. the European Society of Neurogastroenterology and Motility (ESNM) and the European Crohn's and Colitis Organisation (ECCO)) started out with a strong focus on research, leaving clinical management and medical education up to either the national gastroenterological societies or the representation of the national societies under the umbrella of UEG.

Under these complicated circumstances it is easily conceivable that developing a research agenda would be challenging for UEG, leading to possible competition due to rather diverse research interests of the individual societies under its umbrella. To bundle the various research activities of UEG and its member societies, to foster common research activities for all UEG, and to develop and promote future research plans, UEG established a Research Committee with representatives of all member societies in 2017, which paved the way for subsequent actions, among which the survey reported here is just one. It was preceded by the "white book project" (2), a successful attempt to collect epidemiological data illustrating

the range as well as the economic and social burden of major gastroenterological diseases across Europe, with emphasis on the differences and similarities between individual countries.

However, as outlined in the UEG Strategic Plan 2019-2022, the ultimate goal and mission of UEG is to act as the united and trusted voice of all fields of European gastroenterology (3).

Its strategic research objectives are (among others):

- *Initiating and stimulating collaborative research efforts to support our member societies in facilitating digestive health research in Europe*
- *Increasing EU funded digestive health research by providing evidence and advice to funding bodies on priority areas in close liaison with our member societies*
- *Establishing a dedicated researchers' network and platform for exchange on EU funded research and offering a meeting hub for research consortia*
- *Supporting and providing endorsement for pan-European consortium forming initiatives in the exploratory phase of applications to EU funding (ibid., page 11)*

These objectives require not only harmonization of clinical and educational strategies across Europe, but also outlining of future demands and requirements for diagnostic and therapeutic developments, patient management and research that needs to be accomplished to provide better health care in all areas of medicine. The publication of the UEG White Book (2) was a step into this direction, as it established a lobbying platform in Brussels, including formal meetings with European stakeholders and politicians, and fostered European gastroenterology grant applications (4). With this in mind, the UEG Research Committee initiated a survey of the current and future research interests of each individual UEG Ordinary Member Societies (specialist societies). The development of a map of these interests was another attempt towards this common goal.

Methods

Questionnaire and Timeline:

A questionnaire was sent by mail to 17 ordinary member societies (specialist societies) of UEG (Table 1) in early April 2018 (addressed to the individual president/chairperson responsible), with the following introduction followed by six questions (see *Supplementary Material* for the full questionnaire):

UEG, in planning its activities for the years ahead 2020, is attempting to collect and compose a summary of the most urgent research needs in gastroenterology and its subspecialties and for this is asking the boards of all its member societies (and - if available - their respective sub-committees

and/or officers) to state the most urgent needs in the following six research areas. Please use a max of 250 signs for each question and return your answers no later than April 22, 2018.

You may add as many aspects of the question that you address in each text field but please explain why you choose this and not another topic, and avoid using special abbreviations that not everybody understands.

Q1. Most urgent medical need (taking into account socio-economic rational)

Q2. Basic Science Research

Q3. Translational Research

Q4. Clinical Research

Q5. Patient Management Research

Q6. Disease Prevention Research

Additional comments were allowed in a further box of maximum 250 characters.

Asking open, instead of closed, questions (e.g. rank the following research topics according to your society's preference) allowed maximum freedom for the societies to enter any topics of their choice.

Evaluation:

To evaluate and summarize the results, two different approaches were used (Supplementary Material 1)

A) A semi-quantitative evaluation of the responses using full text answers (5).

B) A qualitative approach using manually identified key terms (5).

Results

Overall response

Of the 17 sister societies, all but 4 (EAES, EFISDS, ESCP, ESPEN) responded in time to enter this evaluation.

Unfortunately, the provided PDF-version of the questionnaire did not operate well in all cases, so that most societies sent back a word document instead - and most ignored the pre-set word/character limit. This imbalance between societies created problems in further evaluation (Supplementary Material 2).

Evaluation A: Word counting and word clouds

This evaluation step did not reveal any insights (Supplementary Material 2).

Evaluation B: Key terms and global sorting

From the extracted key sentences per question across all societies, we identified and highlighted terms denoting society-specific research topics (Figure 1A), as well as those that appeared across more than one society's answers (Figure 1B).

***** Figure 1A,B *****

By following this strategy, we identified 14 topics across the 6 questions that were of common interest to at least two societies, and in the majority of cases to 4 or more societies (Table 1). They can be sorted into 5 clusters, each with two aspects (Table 2).

***** Table 1, 2 *****

The society statements attributed to each of the clusters are shown in Supplementary Material 2.

Additional open questions

A response to the open question (see Methods) was given by only 4 of the societies; it did not reveal an output that would easily be summarized across the member societies, but individual statements were to the best of our knowledge, integrated into the other clusters.

Discussion

In agreement with the strategic plan of UEG as of 2018 (3), its Research Committee set out to follow-up its initial "white book" initiative (2) with a survey among its member societies asking for "the most urgent need in various research areas (basic, translational, clinical, patient management, prevention) to stimulate collaborative research efforts among them, to establish a network and platform of researchers and to increase EU funding for digestive health research (4). In past digestive health research has been poorly funded by EU calls. This deemed necessary especially because of the wide range of clinical and scientific activities under the umbrella of UEG, as compared to other medical subspecialties.

The approach chosen an open, though structured, questionnaire to the respective research boards and/or chairpersons of the 17 member societies, similar to a project conducted under the supervision of the European Society of Gastrointestinal Endoscopy (ESGE) among its national member societies (6) was meant to provide an unsupervised and unbiased survey to distill important research topics across the entire gastroenterological field. Yet, it carried the risk of being dominated by the interests of single societies that are stronger in

research, and in funding for research, than others. While it was surprising to see that most of the 17 societies responded favorably to the request, it has to be noted that for unknown reasons 4 (= 23%) societies did not respond. **This is indicative of the fact that UEG still needs to put some efforts into reaching out to all European gastroenterologist, at least with respect to research activities under its umbrella.**

As we have discussed above, while the chosen approach (open questions) may have been close to optimal to receive a response, it was fairly suboptimal to standardize the volume of responses received, and instead allowed too much variability in answering. Thereby, it prevented a simple and quantitative evaluation, and instead, required a semi-quantitative or a vigorous qualitative approach to overcome the quantitative imbalance. For this, we had no valid template but had to develop one in the course of the study.

By extracting core statements for each question and each society, subsequently eliminating society-specific and trivial research demands, and finally condensing research questions that are nominated by 2 or more societies, we were able to identify 10 research topics that cluster into five areas, most of which were coherent with the majority of member societies involved.

The key remaining, yet unanswered, question is how this can be turned into a research or a research-supporting agenda, from an UEG point of view in the future. For one, the societies that have named similar research interests within one cluster or aspect should join forces and collaborate on topics they otherwise would promote and conduct "on their own", as this clearly will enhance their chances to receive national and European funding. In a similar fashion, UEG can provide support for collaborative research proposals along these clusters and aspects, rather than for individualized projects, as it is done currently done with their educational projects. Finally, the clusters would allow a more coordinated political lobbying for future UEG-funded research projects, e.g. for the UEG Public Affairs Committee, that would overcome current limitations (4), and would also feed into other initiatives, e.g. the Biomed-Alliance.

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Table 1: Research topics identified with the 6 questions (Q1 to Q6) and shared by three or more of the 13 specialist societies of UEG. For details of the methodology, see text and Supplementary Material 1 and 2.

Question	Topic	Shared by
Q1	Life-style, nutrition, diet	5
	High-tech medicine	4
Q2	Host-microbe interaction	7
	Immunity	5
	Gut-brain interaction	3
Q3	Biomarkers	7
	Artificial intelligence, precision medicine	5
Q4	EU Trials, networks	2
	Studies, epidemiology	5
	Biomarkers	5
Q5	Education	4
	Studies, trials	3
Q6	Education	4
	Screening, surveillance	4

Table 2: Clustered research topics and aspects of research. For details of the methodology, see text and Supplementary Material 1 and 2.

Cluster	Aspect 1	Aspect 2
1: Hot Topics in Research	Life-style, nutrition, diet, obesity	Microbiota-host interaction, immunity
2: Biomarkers	Biomarkers, profiling, genetics	Gut-brain interaction, enteric nervous system, neural controls
3: Advanced Technology	Hi-tech imaging, artificial intelligence, precision medicine	Personalized medicine
4: Global Research Tools	Biobanking, surveillance, trials, studies	EU trials, epidemiology, networks, surveys,
5: Medical Training	Education, support	Prevention

Figure 1: Example of the qualitative analysis of answers, here for Question 1 and 4. Panel A: All answers of all societies to Question 1, with the raw answers (left), answers identified as society-specific (middle, yellow), and topics that occur in more than one societies' statement (right, marked in different colors); Panel B: The same sorting for Question 4 where society-specific topics were not identified, but three topics for more than 2 societies.