Research in Hepatology
What is hot and what is not!

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Outline

• How to define “hot”?
• What is hot in clinical hepatology?
• Is this hot topic right for me?
• What other factors should be considered in choosing a research focus?
Definition of “hot”

• Attention: a lot of people are interested in it or talking about it

• Potential: field is moving, potential for breakthroughs and new discoveries

• Impact: common problem, affects many people, advances can have major impact

• Funding: identified as high priority for funding
Number of papers on human studies published in HEPATOLOGY in past 12 months

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of papers</th>
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<tbody>
<tr>
<td>Hepatitis C</td>
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<tr>
<td>Cirrhosis and portal hypertension</td>
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<td>NAFLD</td>
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<td>Hepatitis B</td>
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<td>HCC</td>
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<td>Genetic markers and liver disease</td>
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<td>PBC/PSC/AIH</td>
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<td>Microbiome and liver disease</td>
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<tr>
<td>Alcoholic liver disease</td>
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Number of papers on liver diseases in human subjects published in English language 1/1/2011-12/31/2015

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of papers</th>
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<td>Cirrhosis and portal hypertension</td>
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<td>HCC</td>
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<td>NAFLD</td>
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<td>Microbiome and liver</td>
<td>496</td>
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<td>Personalized medicine and liver</td>
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What is hot in 2016?

• By disease
  – Hepatitis C
  – NAFLD
  – HCC
  – Hepatitis B
  – Cirrhosis
  – PBC/PSC
  – Alcoholic liver disease
What aspect of NAFLD?

• Non-invasive diagnosis
  – What is the diagnostic question?
    • NAFLD vs. other liver disease
    • NAFLD alone vs. NAFLD + other liver disease
    • NAFLD vs. NASH
    • Stage of fibrosis
What aspect of NAFLD?

• Non-invasive diagnosis
  – Optimal method: transient elastography, MR, serum biomarkers..
    • Accuracy – what is the gold standard for comparison?
    • Availability
    • Practicality: diagnosis in community, primary care clinic, liver clinic
  • Cost
  • Local expertise
Many other aspects of NAFLD

- Disease burden
- Clinical prediction tool / screening
- Genetic markers
- Therapeutic Intervention
  - Behavioral/lifestyle modifications
  - Pharmacologic
  - Surgical/endoscopic procedure
What is hot in 2016?

• By pathophysiology / theme
  – Gut microbiome: cirrhosis, NAFLD, alcoholic liver disease
  – Fibrosis: non-invasive assessment, anti-fibrotic agents…
  – Sarcopenia and frailty: cirrhosis, HCC, liver transplant
  – Personalized medicine…
  – Bile acids: PBC, NAFLD, HBV…
What about sarcopenia?

• As predictor of outcome
  – Mortality, hospital admissions
  – Cirrhosis, non-cirrhotics e.g. NAFLD?

• How to measure?
  – Direct: CT scan, mid-arm circumference, DEXA
  – Indirect: frailty measurements, e.g. grip strength

• How to reverse?
  – Nutrition, exercise
  – Treatment of underlying liver disease?
Personalized medicine: is the hepatology field ready?

• Tailoring of medical treatment to the individual characteristics of each patient

• To classify individuals into subpopulations that differ in their susceptibility to a particular disease
  – Rate of disease progression or prognosis
  – Response to a specific treatment

so that preventive or therapeutic interventions can be concentrated on those who will benefit, sparing expense and side effects of those who will not

• To provide optimal care according to individual patient’s disease characteristics, personal preference, comorbidities, and social circumstances
Personalized Treatment of Hepatitis B

Treatment

- When to start (stage of liver disease, symptoms, predicted risk of cirrhosis / HCC, patient preference)
- Which drug (predicted response, side effects, cost, patient preference)
- What dose (pharmacogenomics)
- When to stop (stage of liver disease, response, predicted risk of relapse, cost, patient preference for risk of stopping vs. continuing)
Staying ahead of the curve
Which topics will remain hot in the future?
Selecting a research focus

- Pick a disease or theme
  - Is this clinically important?
  - Is it hot now, will it still be hot 5 or 10 years from now?
  - Am I interested or passionate about this topic?
  - Am I in the right environment and do I have the right training, skills and tools to study this topic?

Right place, right time, right person
Right place, right skills

• Environment
  – Availability of patient population for study
  – Methods and tools needed for study in place
  – Collaborators, other expertise

• Training
  – Necessary skills and experience to conduct the study
Edge over competitors

- Environment with unique access to patient population, availability of novel technologies/assays, expertise and reputation in the selected topic
- Personal skills, experience, track record
- Mentors/collaborators experts in the topic
- Support: financial and others…
Is this hot topic right for me?

Which pair of jeans will look nice on me?
Picking the topic is only the beginning

- Define research question
- Design study
- Determine feasibility
  - Patients, methods, finances, staffing
- Map out logistics
- Follow through, monitor progress and adapt as needed
- Attention to details
Road to success can be bumpy
Keys to success

- Seek advice
- Plan well
- Pay attention to details
- Work hard
- Persevere but recognize futility and adapt and change course if needed