Opportunities in bioinformatics

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Harvard Medical School
At CERN
CMS Heavy Ion Group

2011-2016

PhD, MIT

2016-2017

Fellow, CERN

2017-2019

Postdoctoral Fellow, Harvard

Department of Biomedical Informatics

Not an easy decision
Changing to another position in academia

Application process
- Reference letters and publications matter
- Familiar process:
  - CV
  - Cover letter
  - Reference letters
  - Interview/talk

Work
- Small changes in the work environment
- New topic and new ideas
- Immediate applications

Position
- Similar (long) path to permanent position

Why I stayed in academia? Why I switched fields?
How to prepare

Getting called for an interview

- **Connections**
  - I had a connection (MIT alumni) in both labs where I was offered a job

- **Show interest in the topic**
  - Read recently published papers from the lab
  - Specific examples in your cover letter

Preparing for the interview

- **Review**
  - Reading reviews on the subject
  - Studying general statistics

- **Translate**
  - Responding to “What do you work on?” using their vocabulary
My work today

Peter Park’s lab
Department of Biomedical Informatics

- Different backgrounds
- Purely computational
- 33 people
  - 3 researchers,
  13 postdocs, 5 PhD,
  11 software engineers

Hospitals and Institutes affiliated to Harvard Medical School

- Beth Israel Deaconess Medical Center
- Boston Children’s Hospital
- Brigham and Women’s Hospital
- Broad Institute
- Cambridge Health Alliance
- Dana-Farber Cancer Institute
- Forsyth Institute
- Harvard Pilgrim Health Care
- Hebrew SeniorLife
- Joslin Diabetes Center
- Judge Baker Children’s Center
- Massachusetts Eye and Ear Infirmary
- Massachusetts General Hospital
- McLean Hospital
- Mount Auburn Hospital
- Schepens Eye Research Institute
- Spaulding Rehabilitation Hospital
- Veterans Affairs Boston Healthcare System
- Wyss Institute

Ludwig Cancer Center

Neurological disorders, aging and genome
3D genome structure
My work today

Similar
- Processing raw data for reconstructing the genome and finding mutations
- Deduce time evolution from a final state
- Mentality: biases, confounding factors

Not that similar
- Pattern recognition algorithms, different statistical analysis
- Clinically applicable computational methods

DNA sequencing
<table>
<thead>
<tr>
<th>Big collaboration</th>
<th>Small team work</th>
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<tbody>
<tr>
<td><strong>Collaborators</strong></td>
<td>▫ Fewer people involved, less meetings</td>
</tr>
<tr>
<td>▪ Regular input from others</td>
<td>▫ Possible to lose direction</td>
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<tr>
<td>▪ More daily interactions</td>
<td>▫ More focused on one’s own projects</td>
</tr>
<tr>
<td><strong>Workload</strong></td>
<td>▫ Less immediate support from others</td>
</tr>
<tr>
<td>▪ General responsibilities and service work</td>
<td>▫ Easier to build connections in other labs and institutes</td>
</tr>
<tr>
<td><strong>Visibility</strong></td>
<td>▫ Easier to demonstrate contribution by authorship</td>
</tr>
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<td>▪ Easier to build connections in other labs and institutes</td>
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</table>
Most difficult

**Competitive**
- More researchers work on the same topic
- More applications, more competition

**The right question**
- Initially it is hard to ask the good questions
  - Is it already done?
  - Impact
- Most of the time, there is no theory behind hypothesis but a hunch

Keep on moving
Thank you