Academic Industry Partnership (AIP): Managing the relationship
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  – Maryland Biotech for Raven (QA system)
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• Royalty
  – Elekta for Cone beam CT; Active Breathing Coordinator
  – Xstrahl for Small Animal Radiation Research
• Founder of JPLC Associates — a QA device company

Academia: Clinical Needs & Medical Physics

Clinic/Patient
• Needs/Problems
• Testing/Trials

Academia
• Discovery/Truth
• Translation/Refinement

Clinical Solution
/Dissemination Challenges

New issues

Impact

Grants
### Industry: Clinical Needs & Commercial Products

**Clinic/Patient**
- Needs/Problems
- Alpha/beta testing
- Clinical trials

**Industry**
- Requirement/Specifications
- Prototyping
- FDA approval

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**A better model: Partnership**

**Clinic/Patient**
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- Testing
- New needs

**Academia**
- Discovery/Truth
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- New needs

**Industry**
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**Clinical Solution/Commercial Success**

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**Commercial Success**

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**Commercial Success (maybe)**

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**This is what you need**

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**capture 80%**

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**Academic Industrial Partnership (AIP):**
**PAR 07-214 → PAR 10-169 → PAR 13-169**

- Academic and industrial research partnerships to accelerate the translation of preclinical or clinical in vivo imaging systems and/or methods to solve a targeted cancer problem — NCI only.
- An inter-disciplinary, multi-institutional research team.
- Support clinical trials.
- Will not support commercial production, or basic research.
- Innovation: coherent translation plan with in-field validation of near commercial quality systems/methods

**AIP: A successful translation program**

- The pioneering PAR 07-214 funded 37 grants funded: 19 products marketed; 20 clinical trials; 1 CE Mark approval; 24 FDA marketing and investigational approvals; and 79 instances of IP protection.
- 97/542 submissions funded through 2015; results not analyzed for the 27 PAR 10-169 and 20 PAR 13-169 grants
- The AIP procedure is a transformative methodology that provides a new standard for reliable delivery of new capabilities to end users.

**Academic and Industrial Collaboration**

- Have a clear sense of what and who are we working for
  - Academia → discovery (grants);
  - Industry → successful commercial product
    - Both are necessary to benefit the patient
- The clinic is the laboratory to solve real problems that is available to the industry through academia
- Partnership is not a contract
  - deliverable (of what) is an uncomfortable term;
  - beta testing is a different agreement
How to adapt to changes in the relationship

• Have clear expectation of the collaboration
  – IP, personal gain, etc.
  – First right to refusal, etc.
• Hurdles; Sunshine Act, COI, etc.
• Cannot dictate the direction of the individual partners
  – Industry is looking for knowledge, know-how and profitability
  – Don’t get mad if industry chooses a different path
• Academia should look for clinical impact

Secure or renew funding with the industry

• Believe in the impact and vision and stay the course
• Stay ahead to solve the clinical problem at hands
  – A successful clinical solution will likely garner industrial support
• The Academia Industrial Partnership is a great mechanism
  – provides funding to jump-start a project
  – attain the innovation and translation goals of the NCI, the academia and the industry

The Cone-Beam CT story

• Dual Beam Imaging, R01 CA66074, Pre-AIP mechanism
  – The limit of setup accuracy using MV and kV imaging

kV  MV
Dual Beam Imaging on Philips SL: 1996

- Not on a product roadmap
- Collaborate with Elekta (then Philips --- Kevin Brown) to mount a kV x-ray source to the drum gantry
- Hire a Philips engineer as consultant

April- May, 1997; two weekends; *No Downtime*

A functioning onboard CBCT guidance system
**Milestone 2000**

- 2000: Elekta facilitated a 41 cm x 41 cm flat panel imager from EG&G
- Jeff Siewersden worked out the performance of the panel
- Formation of the Elekta-Synergy Consortium

**The First Synergy Prototype: Christie 2001**

- Synergy consortium (CBCT built on site):
  - Beaumont, Princess Margaret, Christie and NKI
- Clinical workflow developed on site.

**William Beaumont Hospital 2002**

**PMH 2003**

**NKI 2003**
Conclusions: Academic Industrial Partnership

- It must be a win-win arrangement
  - Not necessarily a financial gain for academia
- The common goal is to improve healthcare
- Academia is to pursue impact/transformation
- Industry is to produce the next successful and superior product to improve healthcare

- If you are lucky, you may get both !!!