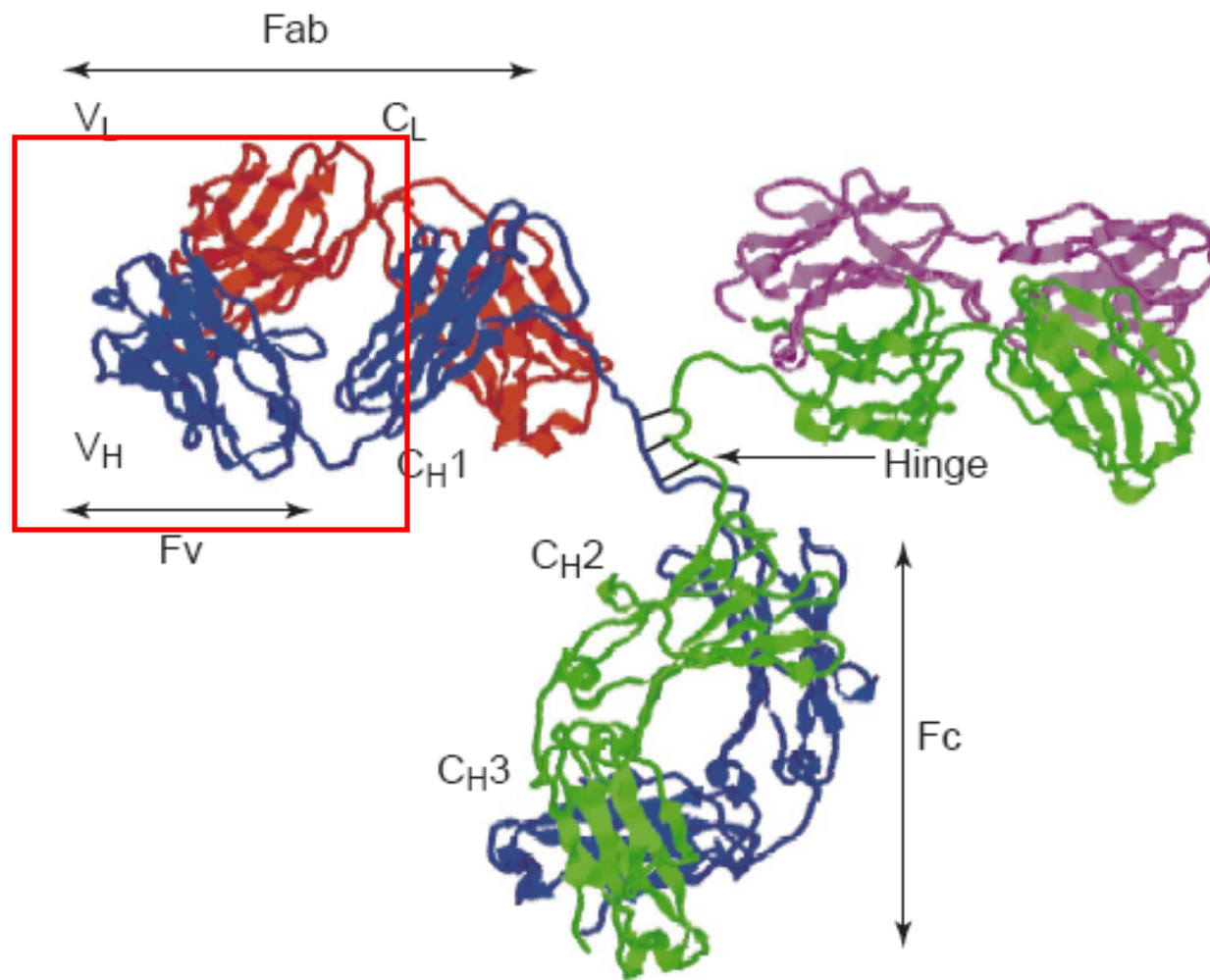
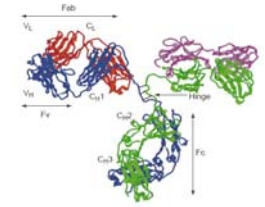


Career Pathways for basic Scientists: an Oxymoron?

Jody D. Berry PhD
Director of Research
Molecular Immunology
Cangene Corp

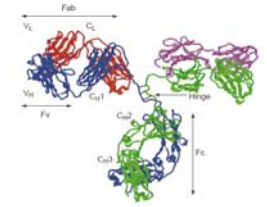
Antibody Structure



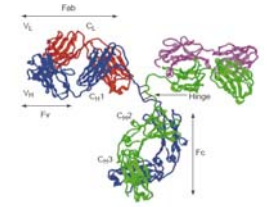


Monoclonal Antibody Technology for Infectious Disease Targets

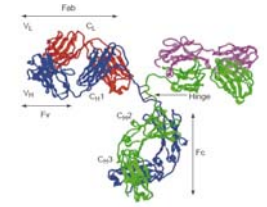
- Phage display libraries for peptides and mAbs
 - Scripps (TSRI) Carlos Barbas 98-2001; U of Missouri, George Smith, 94.
- Classical hybridoma approaches;
 - PhD. Studies 92-98; Lerner lab TSRI 98-2001;
 - NCFAD/CFIA 2001-2005; PHAC-HC 2005-08.
- Recombinant Ab construction (98- present)
- Many emerging viral infectious disease targets and outbreak management (SARS-CoV) and Toxins (Ricin, BoNT, Anthrax)
- Epitope Analysis / immunochemistry
- Immunoglobulin gene analysis



- Fundamental sciences (basic)
 - Niche versus esoteric
- How do you get the opportunity to set up your own laboratory
 - Post-doctoral experience counts
- The Three year – look ahead look back planning
- non-academic work settings
 - Public Service/ Government laboratories
 - Industry



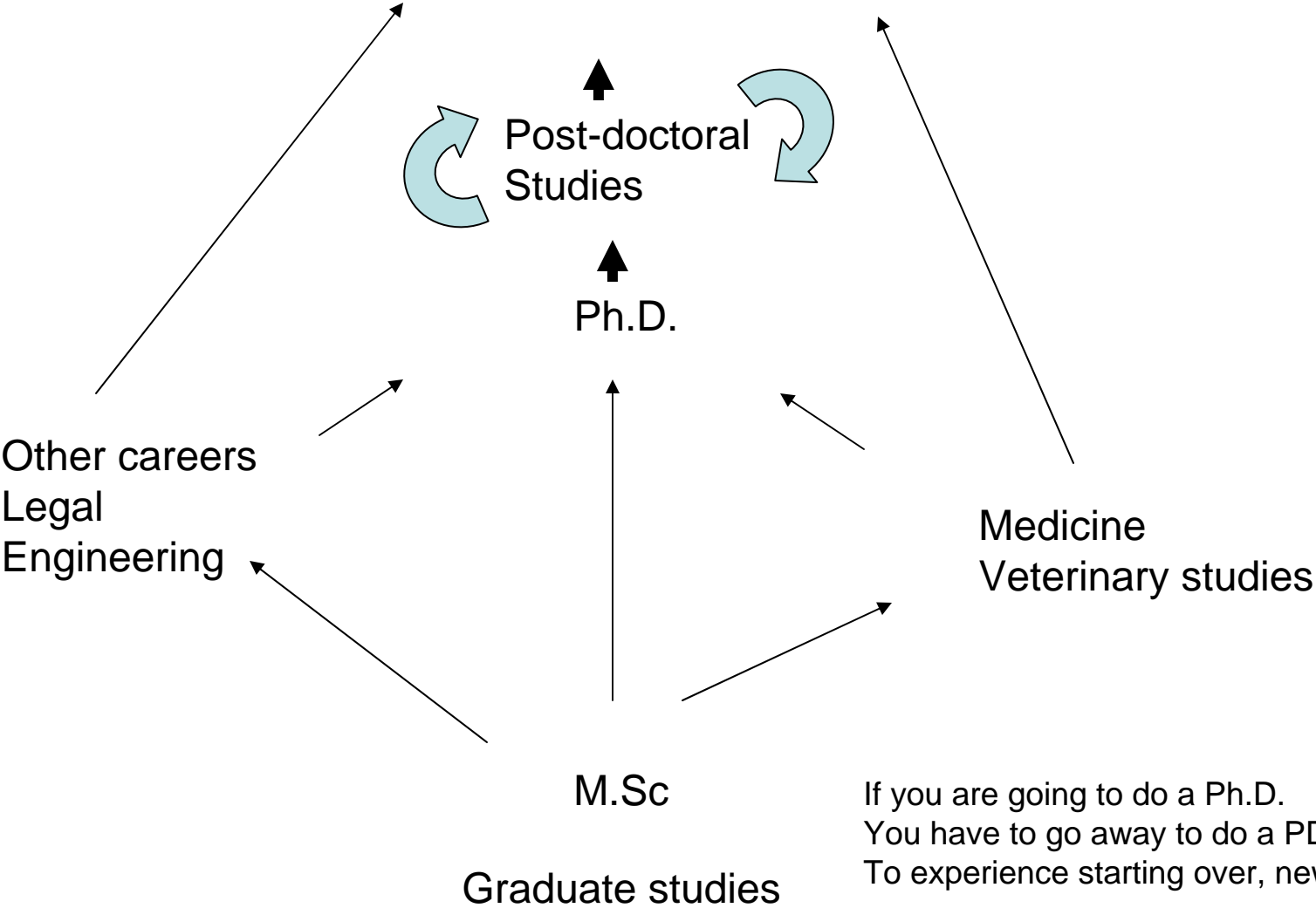
- Fundamental sciences (basic)
 - Niche versus esoteric
 - You gotta excel



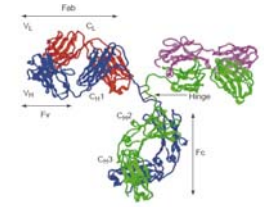
“Real Job”

- The Three year – look ahead look back planning
- What is your goal?
- Location important?
- Breadth of skill set?
- Marketability or Niche?

“Real Job”



- non-academic work settings
 - Public Service/ Government laboratories
 - Industry

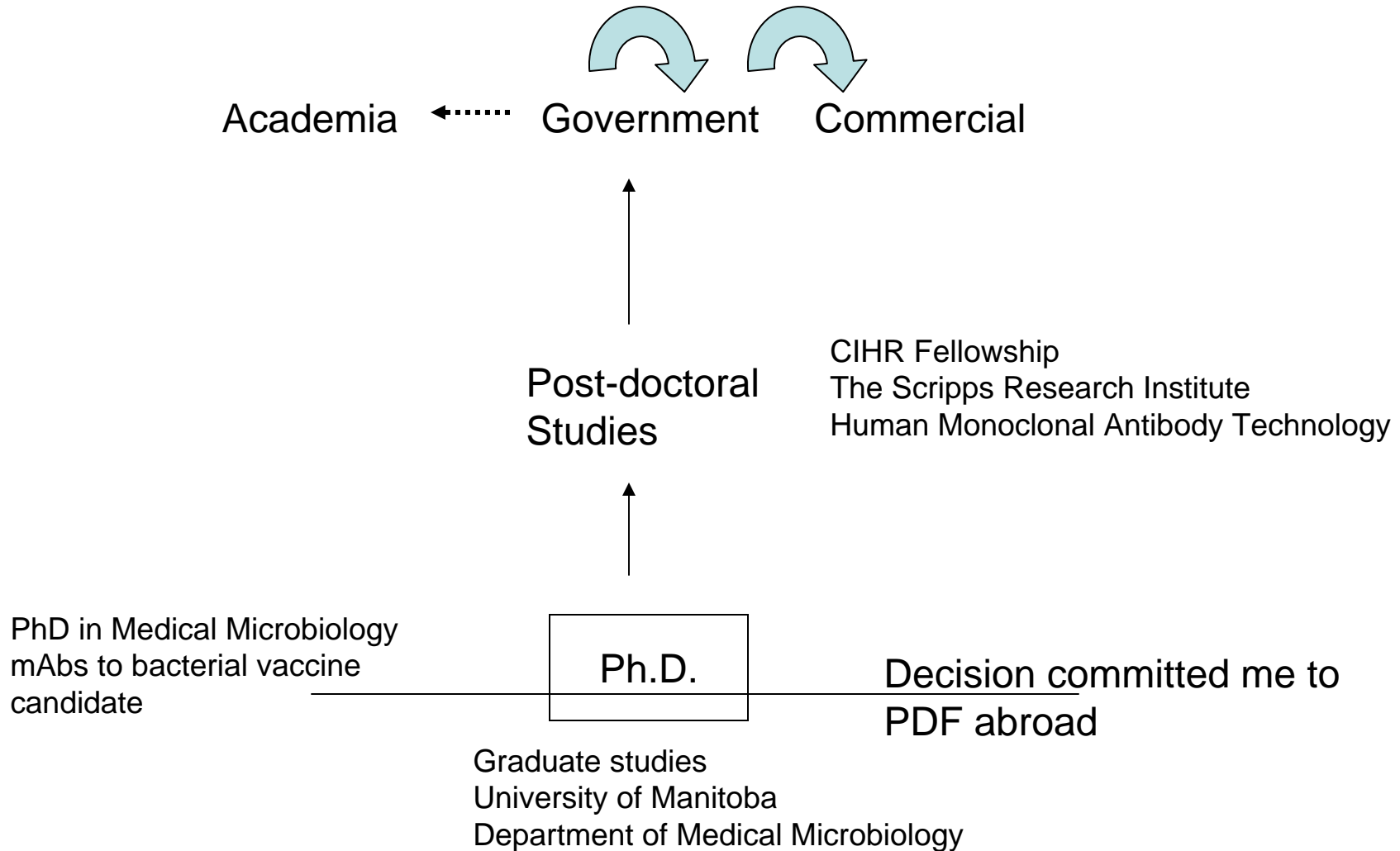


- How do you get the opportunity to set up your own laboratory
 - Post-doctoral experience counts
 - Make a name for yourself through work ethic, Publication etc
 - Contacts and collaborators (Word of Mouth)
 - Where is the field going?
 - Where are the jobs?
 - Employer websites, pools, positions
- <http://jobs-emplois.gc.ca/index-eng.htm>

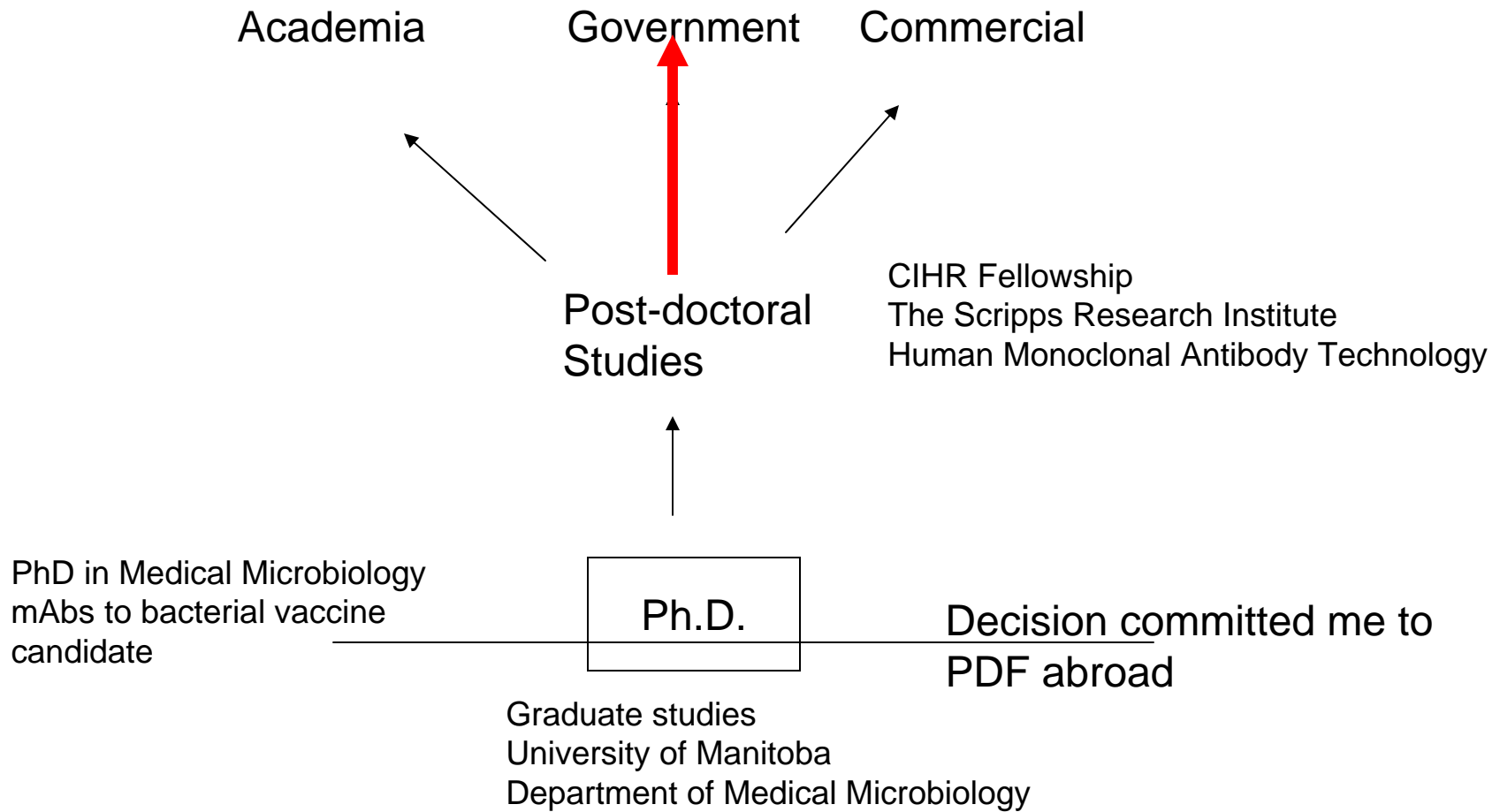
- Toolchest- If you want to do research in a novel niche on
 - Eg. Cancer – perhaps lung cancer
- -Then consider training in your M.Sc. In Molecular Biology and your PhD in Cell Biology ; Post doc in Cancer – not necessarily Cancer all the way through– so that you bring something new intellectually to the task.

“Real Job”

My idea of real job was to be able to do useful research in my own laboratory in Canada



My initial idea of real job
-to be able to do useful research
in my own laboratory in Canada





Graduate Training – Study of *C. trachomatis* outermembrane as a vaccine candidate

-Tissue culture

-hybridoma

-cultivation of Chlamydia



-Animal handling/immunizations/vaccine trials

-mice and rabbits

-Immunoassays

-immunochemical – EIAs, Western immunoblots, RIPs, Peptide mapping

-in vitro neutralization (bioassays)

-in vivo challenge models

-mAb characterization – pin and phage peptide epitope mapping

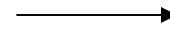


Graduate Training – Study of *C. trachomatis* outermembrane as a vaccine candidate using murine mabs

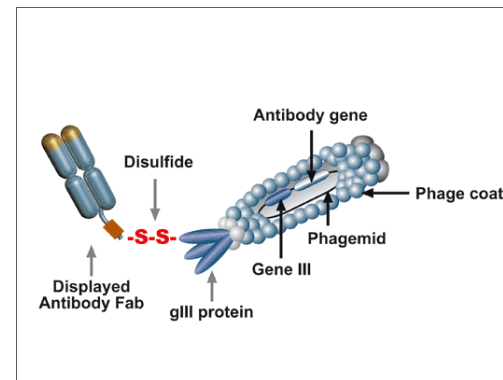
- Tissue culture
 - hybridoma
 - cultivation of Chlamydia
- Animal handling/immunizations/vaccine trials
 - mice and rabbits
- Immunoassays
 - immunochemical – EIAs, Western immunoblots, RIPs, Peptide mapping
 - in vitro neutralization (bioassays)
 - in vivo challenge models
 - mAb characterization – pin and phage peptide epitope mapping

Postdoctoral Training – Development of Human mAbs to HIV-1
STARTING FROM SCRATCH in A NEW AND HIGHLY COMPETITIVE LAB

- Maintained Tissue culture – optimised hybridoma
- Animal handling/immunizations/vaccine trials in BL-3 conditions / Vaccinia
- Cutting edge Molecular Biology
 - immunoglobulin gene libraries
 - cell fusion assays, biacore
 - fluorescence assays
 - live in vivo virus immunization
 - immune phage library
 - human, rabbit, mouse



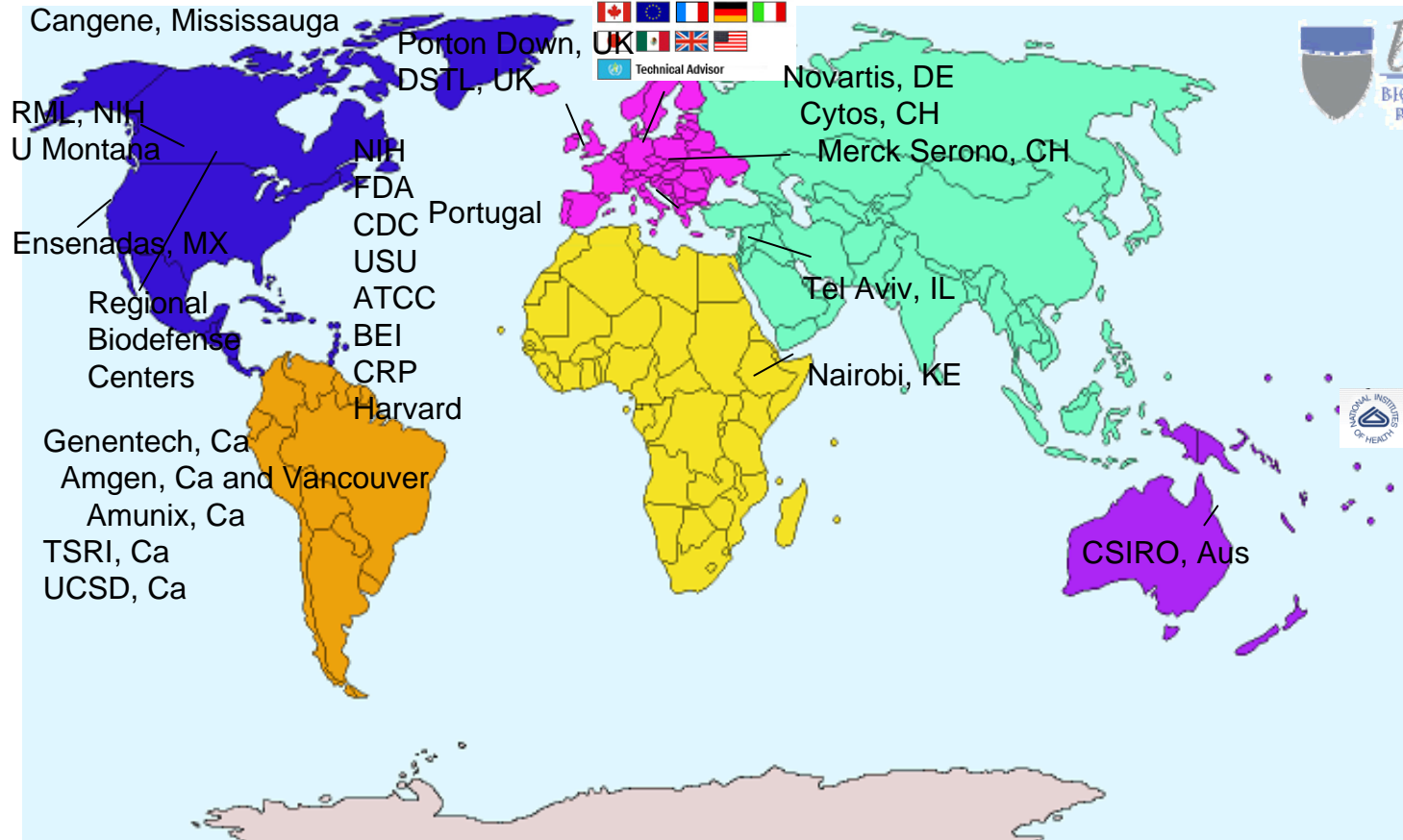
PhD + connections to
-Infectious disease experts
-Phage library world

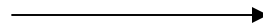


Siegel DL. (2002). *Transfus Clin Biol.* 9:
15-22.

VIDO, SK
 DRDC, AB
 CFIA, CA
 PHAC, CA
 Immunoprecise
 Twinstrand

GHSAG (Global Health Security Action Group)
 Ricin Workshop, Berlin 2007





-cutting edge molecular biology
-lifelong international colleagues



**NATIONAL MICROBIOLOGY
LABORATORY (NML)**

**NATIONAL CENTRE FOR FOREIGN
ANIMAL DISEASE (NCFAD)**



Public Health
Agency of Canada

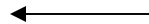
Agence de la santé
publique du Canada



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

Jody D. Berry, Ph.D.
Chief, Emerging Bacterial Pathogens Division
Head Monoclonal Antibody, Bioforensic Development Units
National Microbiology Laboratory
Public Health Agency of Canada



Jody D. Berry, Ph.D.
Head Monoclonal Antibody Facility
NCFAD and National Microbiology Laboratory
CFIA

Restarted recombinant mAb research in own lab

- development of mAb to human disease agents
Oversaw large Bacterial Reference and Research Division
STARTED NEW LAB

NCFAD – honed hybridoma development to GLP standards

- Development of mAbs for diagnostics to animal disease agents
- development to human disease agents – SARs-CoV
STARTING FROM SCRATCH
- Developed Biodefense emergin pathogens mAb research program



NATIONAL MICROBIOLOGICAL LABORATORY (NML)



NATIONAL CENTRE FOR FOREIGN ANIMAL DISEASE (NCFAD)



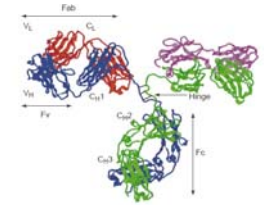
Public Health Agency of Canada / Agence de la santé publique du Canada



Canadian Food Inspection Agency / Agence canadienne d'inspection des aliments



-pure cutting edge research towards development of Real therapeutic products to improve save human lives



Academia

Government

Commercial

Academia – tenured position

– freedom

-instability in early years

-stability at achievement of tenure (not a given)

-salary low in early years but maintain ability to supplement through consulting writing etc

Government – indeterminate (permanent) job

-more top down but substantial freedom

-stable and stable funding (huge support for laboratory if in vogue)

-Salary better initially but tops out

-unable to supplement salary

-Administrative responsibility / red tape

Industry – Commercial

-higher salary

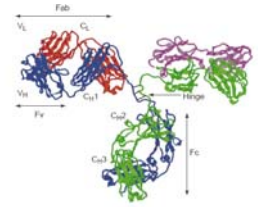
-less stability (in particular in startups, revenue generating companies more stable)

-intermediate support

-highly focused

Can still work in Academia

Government – Public Service



- Government – indeterminate (permanent) job
 - more top down but substantial freedom
 - relatively stable position and stable funding (huge support for laboratory if in vogue)
 - Salary better initially but tops out
 - unable to supplement salary
 - Administrative responsibility / red tape
 - Public service in Canada has ~30% of workforce retiring in next 5-10 years
-
- Events of 2001 made Biothreats in vogue for some time



Patience leads to wisdom