Integrated Models in a Course-based Curriculum

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What are Students Being Trained to Do?

	N
Basic Physician	100
Academic Physician	20
Public Health Practitioner	3-5
Population Health Researcher	1-2

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Integration of Training Across Career Tracks

Basic MD	Fundamentals in Pop. Health	MD		
Academic MD	Fundamentals in Pop. Health	Basic Theory and Methods	MD + Year Out/MS	
Public Health Pract.	Fundamentals in Pop. Health	Comprehensive Theory and Methods	2° Application	MD + MPH
Pop. Health Researcher	Fundamentals in Pop. Health	Advanced Theory and Methods	1° Application	MD + PhD

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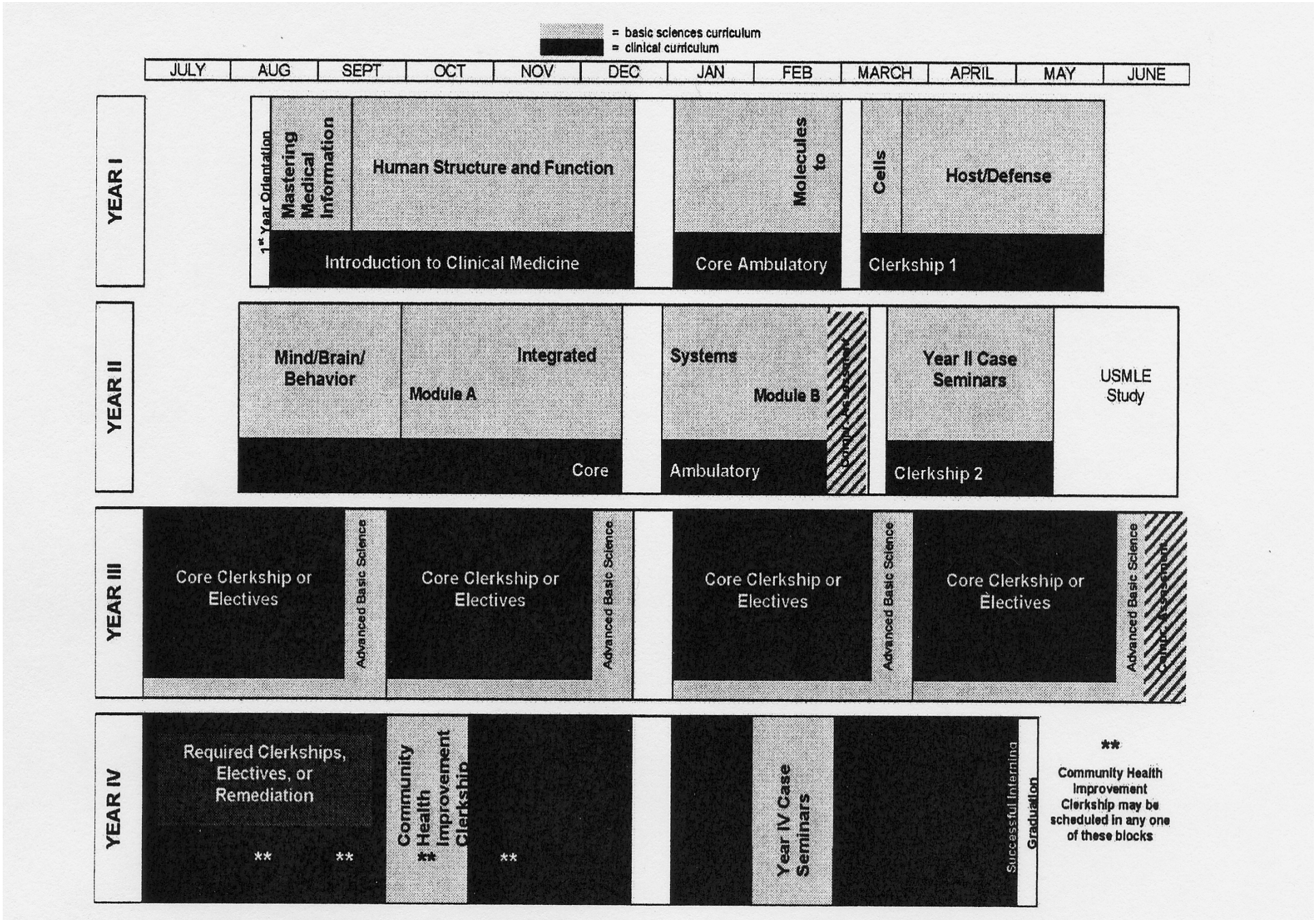
The Double Helix Curriculum at the University of Rochester



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University of Rochester School of Medicine: MD Curriculum in Population Health

Year I	**Mastering Medical Information**
Year I-II	Core Ambulatory Clerkship
Year III	Core Clinical Clerkships
Year IV	Community Health Improvement Clerkship

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Mastering Medical Information

- First four weeks of Medical School
- Hybrid Curriculum (Lectures, Labs, PBLs)
- Population Science Knowledge Competencies
  - Epidemiology
  - Biostatistics
  - Public Health Strategies
- Attitude and Skill Competencies
  - Informatics
  - Critical Reading of Literature
  - Denominator-based Thinking

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University of Rochester School of Medicine MD Curriculum in Population Health

Year I	Mastering Medical Information
Year I-II	**Core Ambulatory Clerkship**
Year III	**Core Clinical Clerkships**
Year IV	**Community Health Improvement Clerkship**

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Community Health Improvement Clerkship

- Required Four-Week Clerkship in Year IV (August – November)
- Brief Didactic Lecture Series by Representatives of Community Organizations
  - Public Health Agencies
  - Voluntary Health Organizations
  - Community-based Groups
- Focus on Community Health Skill Competencies
- Placement with Community Agency for Work on Discrete Project

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Interventions to Improve Health at the Community Level

- Assessment
- Education (General, School, Worksite, Patients)
- Community Organization and Partnering
- Assuring Personal Health Services
- Environmental Change
- Policy Change

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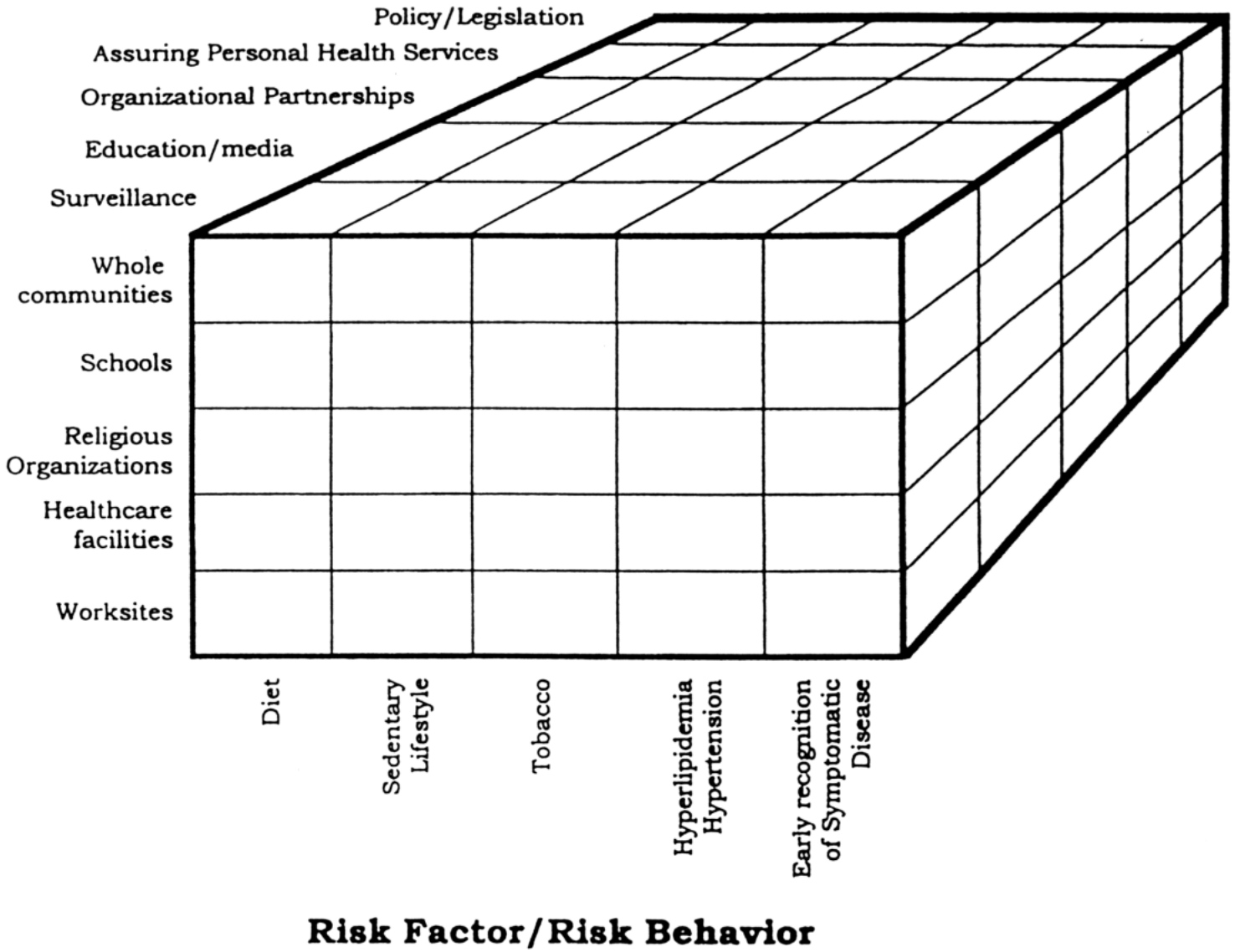
Essential Public Health Services



Community Setting

Risk Factor/Risk Behavior

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Skills Needed for Community Service

1. Understand and interpret local health data.
2. Communicate medical information to lay audiences in clear, understandable terms.
3. Appreciate role of voluntary and other nongovernmental health organizations
4. Acknowledge community resources available to assure provision of essential health services.
5. Identify environmental factors affecting health and ways to ameliorate them.
6. Know how laws affecting health are made and enforced and participate in the process to strengthen them.

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Community Health Improvement Clerkship: Examples of Student-Originated Projects

Project	Community Agency
Toy Gun Trade-In Program	Rochester Police Dept.
Strong Stories (Student-led Television Series)	WXXI (Local PBS)

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Trends in Research as Part of the Rochester Medical School Experience

- Rich tradition in preparing physicians for careers in academic medicine
- Majority of students participate in research project
  - Summer project between Year I and II
  - 16-19% of students take Year-Out
  - 6-8 % of students in MD/PhD Program
- Growing interest in careers in clinical and community health research

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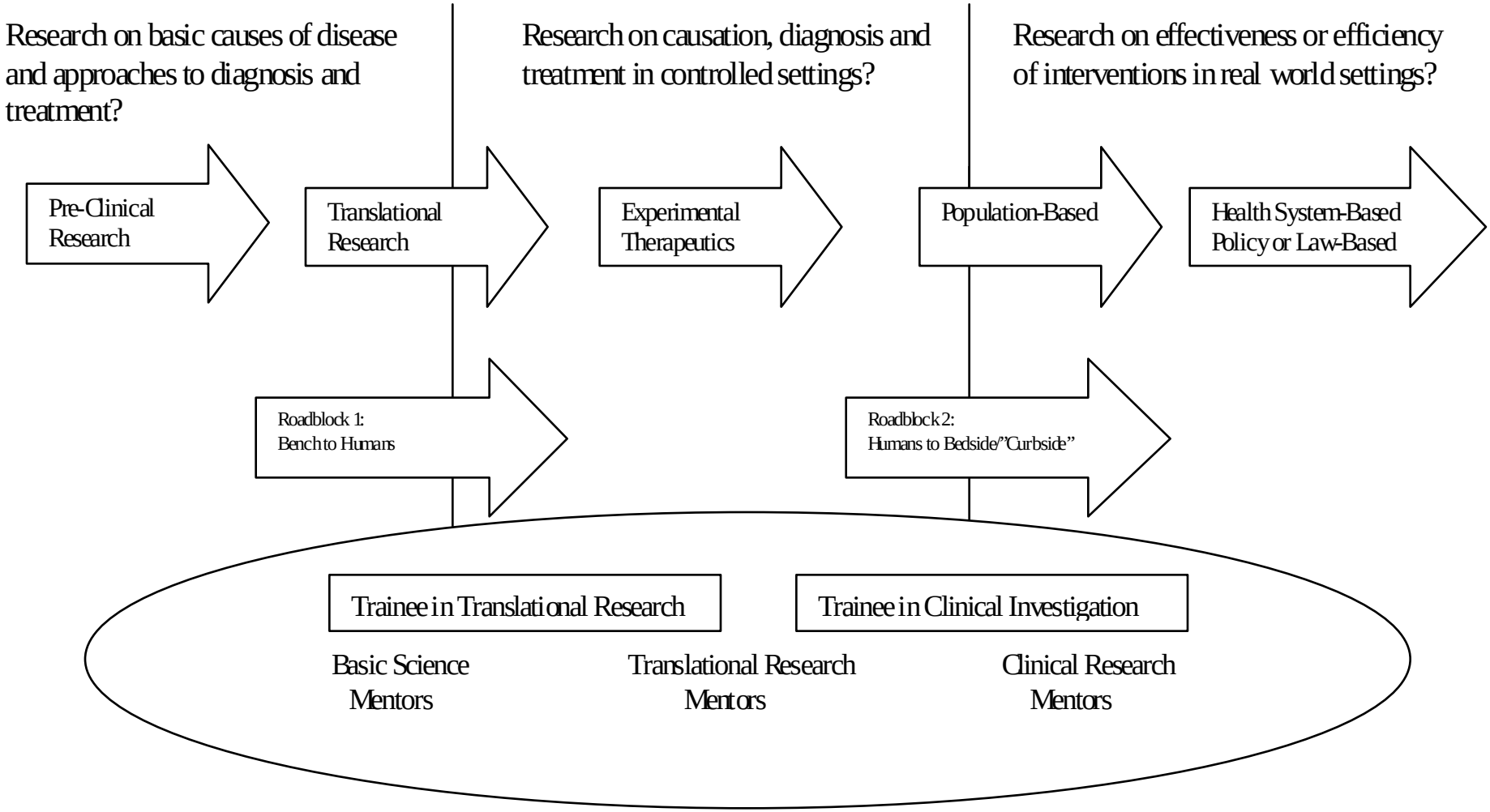
Conceptual Rationale for the Rochester CTSI Education and Training Key Function



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Putting the Pieces Together: The Academic Research Track

- Self-identification of Year I students interested in academic careers
- Enrichment seminars in Year I and Year II
- Short-term Practical Research experience with careful placement of students
- Year-out for Masters Degree (MPH for clinical or population research)
- Mentored research experience
- No additional tuition for Year-out

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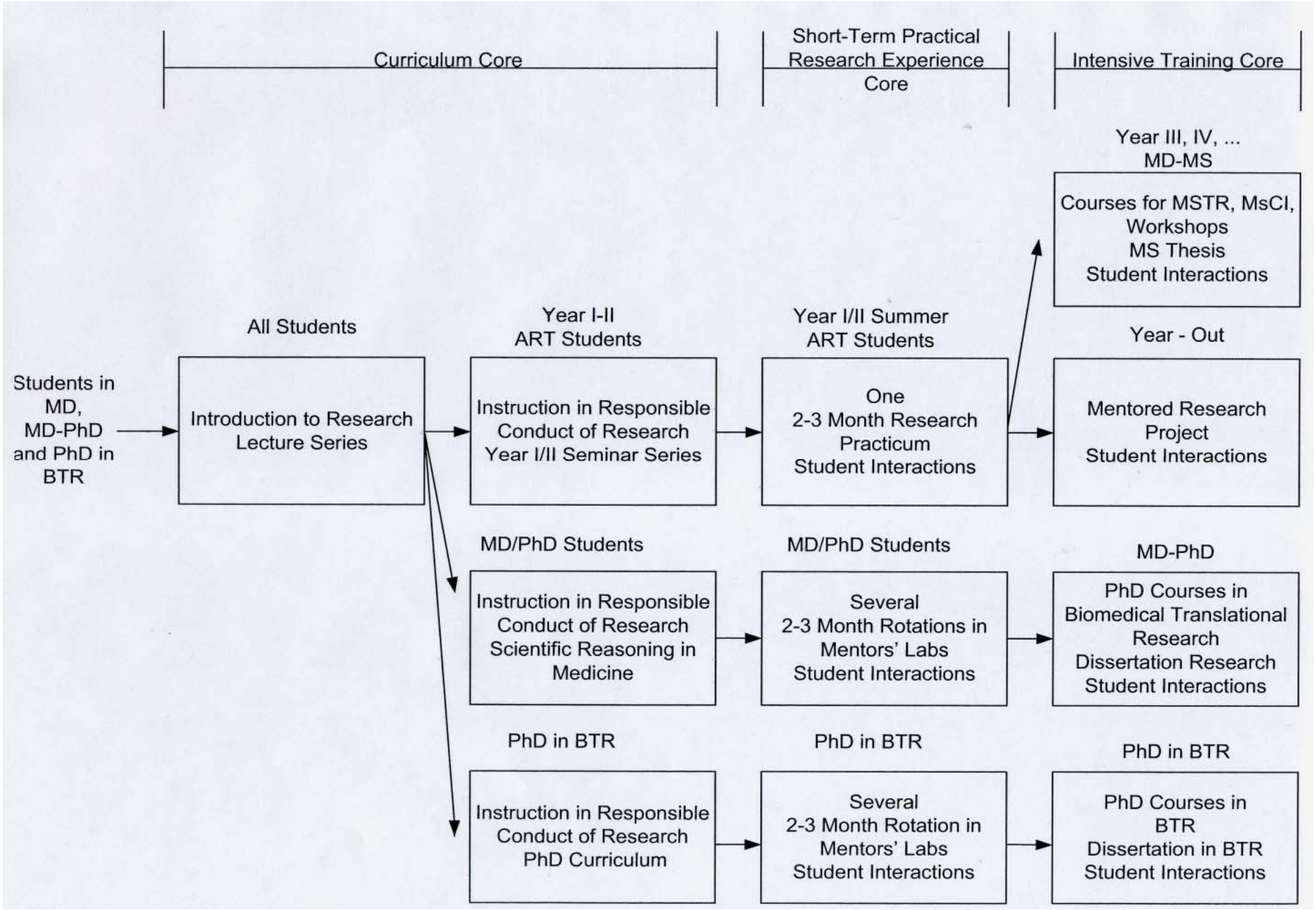
Overview of the Rochester Predoctoral Clinical Research Training Program.



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H.T. Year III Medical Student Taking a Year Out to Study Deaf Health

- One of 11 funded by T32 component of CTSA Grant (Stipend)
- Attached to Rochester Prevention Research Center/National Center for Deaf Health Research
  - ASL training
  - Qualitative research on attitudes of Deaf persons toward research
  - Participation with ASL video-based survey of Rochester Deaf population for BRFS-type information

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Course Requirements for MS-Translational Research, MS-Clinical Investigation, MPH

- Different credits required (MS-TR and MS-CI: 32 credits, MPH: 45 credits)
- Core public health sciences required by all 3 degrees:
  - Epidemiology
  - Biostatistics
  - Computer-based data analysis (SAS)
- Overlap with many required and elective courses
  - Outcomes Research
  - Advanced Epidemiology/Molecular Epidemiology
  - Advanced Statistics
  - Medical Decision-Making/Cost Effective Analysis
- Encouragement to Attend Skill-building Workshops and Seminars
  - Clinical/Translational Research Seminar Series
  - Public Health Grand Rounds

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Skill-building Workshops Offered as Part of Clinical Research Curriculum Program

- Research Informatics
- Ethical Conduct of Research
- Recruitment and Retention of Human Research Subjects
- Scientific Communication
- Technology Transfer/Working with Industry
- Practical Skills in Grant Writing
- Research Project Administration
- Community Participatory Research
- Academic Career Development

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A.D-M.: Year IV Medical Student at the University of Rochester

- Considering an academic career
- Willing to commit a year to gain research experience
- Interested in cardiovascular disease, especially as it occurs in the African American Community
- Recognizes need for additional research knowledge and skills

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A.D-M.: Year IV Medical Student in Rochester's Academic Research Track

- Short-term research experience with placement in an NIH Intramural Program (Jackson Heart Study)
- Submission of Minority Supplement to JHS contract
- Project mentored by JHS investigator and URMC faculty examines echocardiographic changes over time in African American hypertensive persons
- Enrollment without tuition in MPH-Clinical Investigator Track
- Deferred graduation to 2006 with MD-MPH

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MD-PhD Programs in the Population Sciences at the University of Rochester

- Four PhD Programs
  - Biostatistics/Computational Biology
  - Epidemiology
  - Health Sciences Research and Policy
  - Translational Biomedical Sciences (Application in process)
- Institutional Support
  - Medical Scientist Training Program (NIH)
  - Clinical Translational Science Award (NIH)
- 1-2 students per year; 7-8 years per student

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Conclusions

1. The reasons for initiating an MD curriculum with anatomy/histology are unclear; there are many advantages to beginning with population science.
2. Public health sciences need to be integrated across the MD curriculum, not just in the preclinical years.
3. Education should emphasize attitudes and skills, rather than just knowledge.
4. Each type of physician-trainee (clinician, teacher, researcher, public health practitioner) should have population science education appropriate to their planned career.

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