

HOW TO BECOME A CARDIOVASCULAR INVESTIGATOR

CAREERS IN BASIC CARDIOVASCULAR RESEARCH

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BASIC AND TRANSLATIONAL CARDIOVASCULAR RESEARCH: A COMPARISON

	BASIC	TRANSLATIONAL
FOCUS	NEXT LOGICAL STEP	ULTIMATE GOAL
MOTIVE & ENDPOINT	NEW KNOWLEDGE	HEALTH NEED
HUMAN SUBJECTS	MAYBE	DEFINITE
INDUSTRY PARTNER	MAYBE	DEFINITE
REGULATORY OVERSIGHT	LITTLE	GREAT
CONFLICT OF INTEREST POTENTIAL	LITTLE	STRONG

PERCEIVED BARRIERS TO BASIC RESEARCH CAREERS

- **LENGTH OF TRAINING**
- **EXCLUSION FROM NIH LOAN REPAYMENT PROGRAM**
- **EMPHASIS ON CLINICAL AND TRANSLATIONAL RESEARCH (e.g. NIH ROADMAP)**
- **RELEVANCE TO CLINICAL ACTIVITY**
- **COMPETITION FOR FEDERAL FUNDING**

REALITIES OF CAREERS IN BASIC RESEARCH

- LENGTH OF TRAINING IS SIMILAR FOR SUCCESSFUL PHYSICIAN SCIENTIST FOR BASIC, TRANSLATIONAL AND CLINICAL RESEARCH
- THERE ARE ALTERNATIVES TO THE NIH LRP FOR EDUCATIONAL DEBT RETIREMENT
- NIH ROADMAP CONSUMES A SMALL PORTION OF THE NIH EXTRAMURAL BUDGET
- A CLINICAL PROBLEM DRIVES ALL PHYSICIAN SCIENTISTS (e.g. BROWN AND GOLDSTEIN, AGRE)
- COMPETITION IS CYCLICAL AND MD'S DO AS WELL AS PhD'S – MOST DECIDE DURING HOUSESTAFF AND FELLOWSHIP

CHOOSING AN INSTITUTION/DEPARTMENT

- NIH RANKING (TOP 10% DEPARTMENTS OF MEDICINE RECEIVE ~35% TOTAL FUNDING)
- STRUCTURED PROGRAMS FOR BEGINNING FACULTY (RESEARCH COMMITTEE, MSTP PROGRAM, GRADUATE STUDENTS, TRAINING GRANTS)
- STRENGTH IN YOUR AREA OF INTEREST
- AVAILABILITY AND QUALITY OF LABORATORY SPACE
- CRITERIA FOR PROMOTION IN THE TENURE TRACK

CHOOSING A MENTOR

- PAST AND CURRENT TRAINING RECORD
- PAST AND CURRENT FUNDING RECORD (NIH CRISP DATA BASE)
- LEVEL OF APPOINTMENT: ASSOCIATE vs. PROFESSOR
- IDENTITY OF THE DIVISION CHIEF AND CHAIRMAN
- HAVE MENTOR(S) AT EACH STAGE OF YOUR CAREER

NEGOTIATING A PACKAGE

- ACADEMIC RANK
- SALARY (AAMC DATA BASE)
- START-UP FUNDS
- LABORATORY SPACE
- CLEAR BENCHMARKS FOR PROGRESS (e.g. TIMING OF INDEPENDENT FUNDING)
- PROTECTED TIME FROM CLINICAL RESPONSIBILITIES

NIH RESEARCH AND TRAINING CAREER OPPORTUNITIES IN BASIC RESEARCH

- T32 AND F32 TRAINING AWARDS
- K01 MENTORED RESEARCH SCIENTIST DEVELOPMENT (NEW AREA 3-5 YEARS SALARY DEPENDS ON INSTITUTION 75% PROTECTED)
- K08 MENTORED CLINICAL SCIENTIST AWARD (3-5 YEARS 75% PROTECTED FOR MD)
- K99/ROO PATHWAY TO INDEPENDENCE OR "POCKET" GRANT

NHLBI IS COMMITTED TO NEW INVESTIGATORS

- **SUPPORTS MORE K AWARDS THAN ANY OTHER INSTITUTE**
- **FUNDED 29 K99/ROO POCKET GRANTS IN FY2007**
- **1ST TIME RO1 INVESTIGATORS FUNDED AT 5 PERCENTILE POINTS ABOVE PAYLINE AND FOR 5 YEARS IF REQUESTED**
- **RO1s THAT ARE >5 BUT <10% ABOVE THE REGULAR PAYLINE MAY UNDERGO EXPEDITED ADMINISTRATIVE REVIEW FOR FUNDING**

WHY YOU SHOULD BECOME A BASIC CARDIOVASCULAR INVESTIGATOR

- “SELLER’S MARKET” DUE TO DECLINE IN PHYSICIAN SCIENTIST POOL
- 50% OF THE OVERALL NIH EXTRAMURAL BUDGET DEVOTED TO R01 AWARDS
- IT IS THE ENGINE THAT DRIVES BIOMEDICAL PROGRESS
- GENOMICS, PROTEOMICS AND ALL SYSTEM’S BIOLOGY GENERATE NEW HYPOTHESES AT AN EXPONENTIAL RATE

SOME EXAMPLES OF BASIC CARDIOVASCULAR RESEARCH IN THE CLINIC

- **CARDIAC ENZYMES AND CELL DEATH
(REIMER AND JENNINGS)**
- **BETA BLOCKADE (SUTHERLAND AND
ALQUIST)**
- **ACE INHIBITION (SKIFF)**
- **THROMBOLYSIS (RATNOFF)**

CHOICES FOR THE CARDIOVASCULAR INVESTIGATOR: WHERE DO YOU FIT?

- DISCOVERY
- TRANSLATION
- APPLICATION

**BASIC RESEARCH, CLINICAL DISCOVERY
AND PATIENT ORIENTED RESEARCH
ARE INTERDEPENDENT AND NOT
SUCCESSIVE STEPS**

PITFALLS FOR THE BEGINNING BASIC CARDIOVASCULAR INVESTIGATOR TO AVOID

- BE DRIVEN BY A PROBLEM AND NOT BY A TECHNIQUE
- BE RUTHLESS ABOUT YOUR PROTECTED TIME
- EVERY ABSTRACT SHOULD BECOME A MANUSCRIPT (ALMOST)
- DRAFTS OF MANUSCRIPTS AND GRANTS SHOULD GO TO YOUR MENTOR EARLY
- RELISH CRITICISM

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