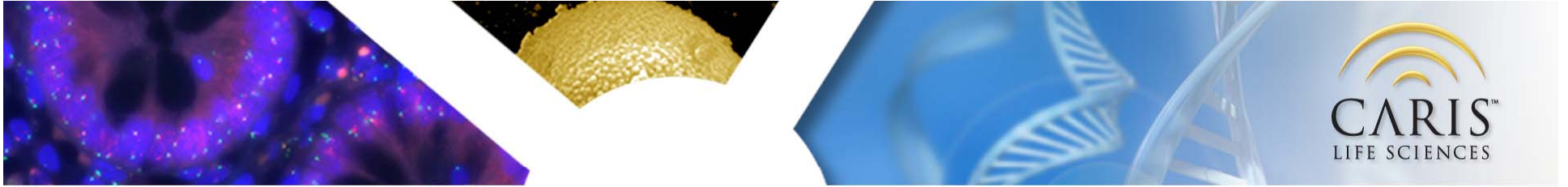


Clinical Molecular Genetics

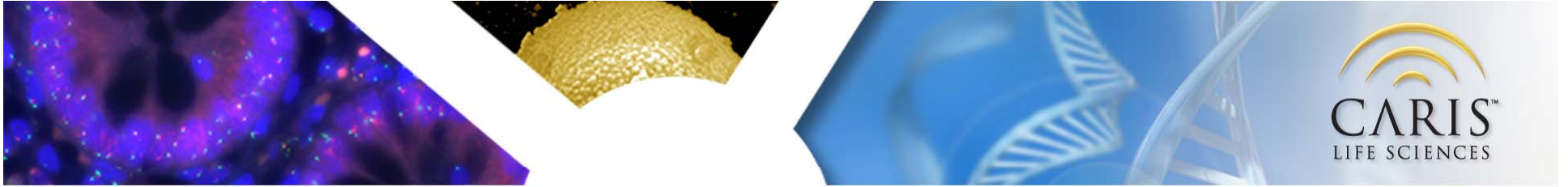
Ryan P Bender PhD FACMG

Vanderbilt University 27 July 2010



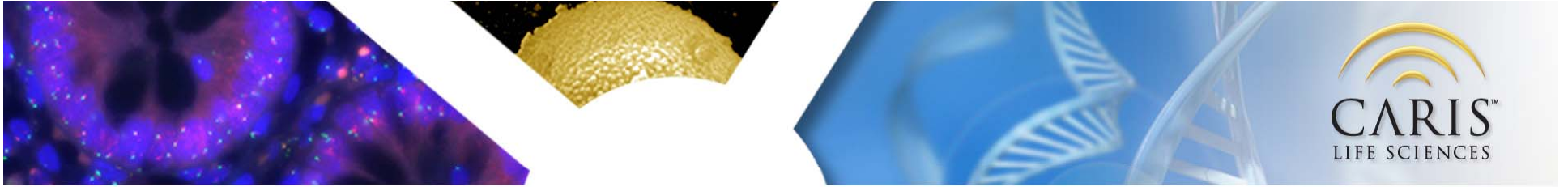
Clinical Laboratory Genetics

- Biochemical Genetics
- Cytogenetics
- Molecular Genetics



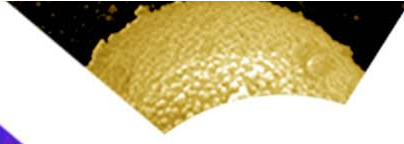
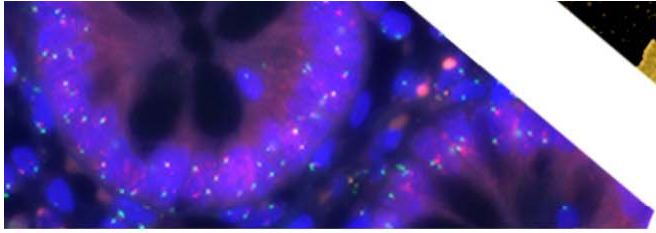
Clinical Molecular Genetics

- Analyze patient samples for small changes in DNA
- Prepare clinical reports
- Develop clinical assays in a CLIA setting
- Applications
 - Diagnosis of a genetic disorder
 - Prenatal diagnosis
 - Carrier testing
 - Pharmacogenomics
 - Disease prognosis
- Good job outlook
- Starting salary of 80-120k



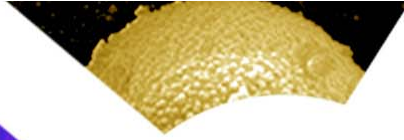
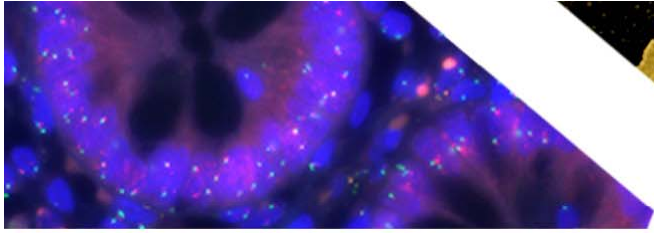
Molecular Geneticist Skill Set

- Ability to critically review papers
- Management
- Budgeting and cost analysis
- Communication
- Broad knowledge of molecular technologies and genetics
- Research and Bioinformatics



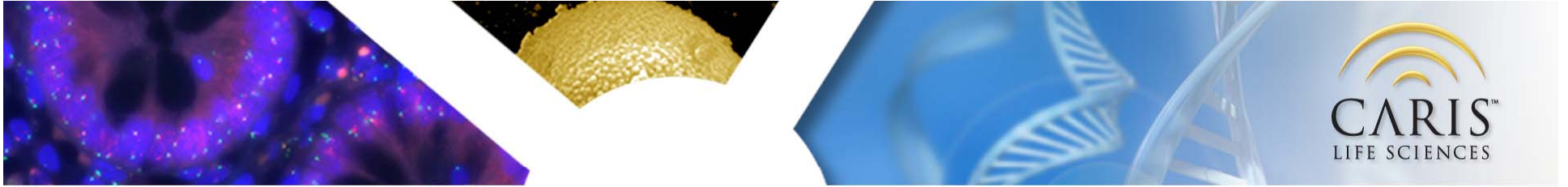
What is My Typical Day Like?

- Never typical
- Clinical data analysis and report generation
- Discuss testing indications/limitations, results and clinical significance with clients
- New test and technology development
- Performing necessary QI/QA/QC



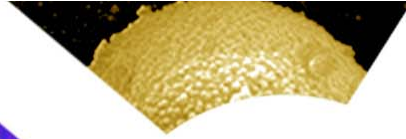
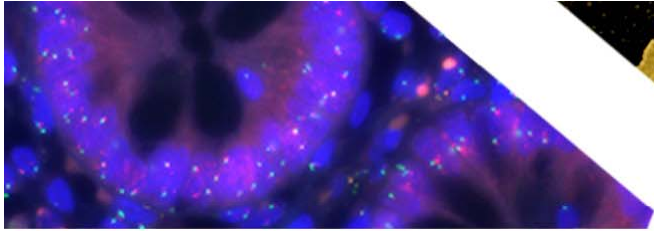
What is My Typical Day Like?

- Education of technologists, sales personnel, etc.
- Troubleshooting
- Pharmaceutical consulting
- Review current literature
- Research and development
- Business strategy planning
- Workflow management



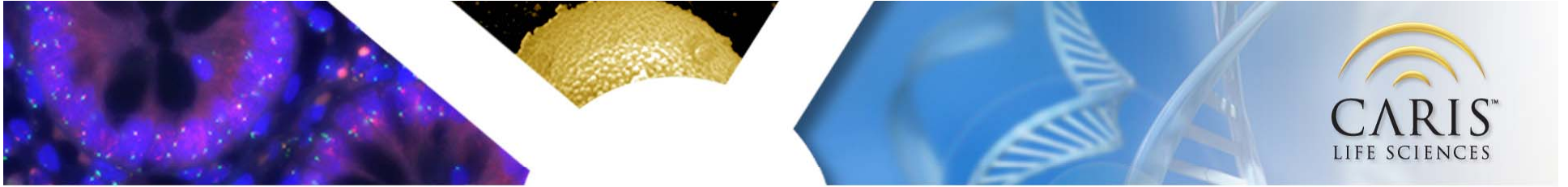
Challenges

- Large amount of documentation
- Can be monotonous
- Insufficient number of geneticists
- Relatively undeveloped field
- Acceptance of molecular diagnostics by the medical community
- Integration of test results with patient care
- Ethical and moral dilemmas



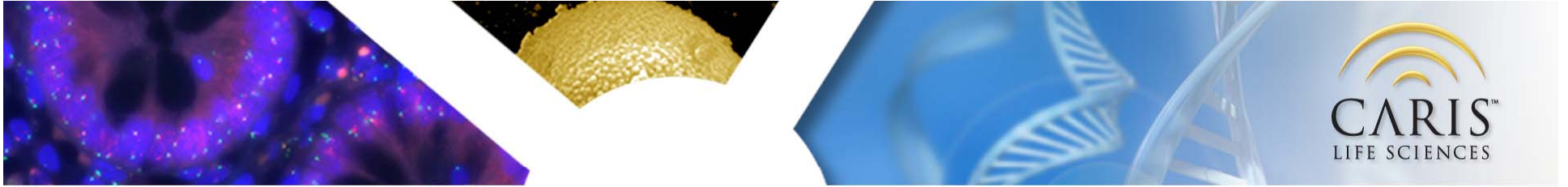
Rewards

- Measurable benefit to people
- Sense of ownership
- Unique research opportunities
- Job security
- Rapidly developing and forming



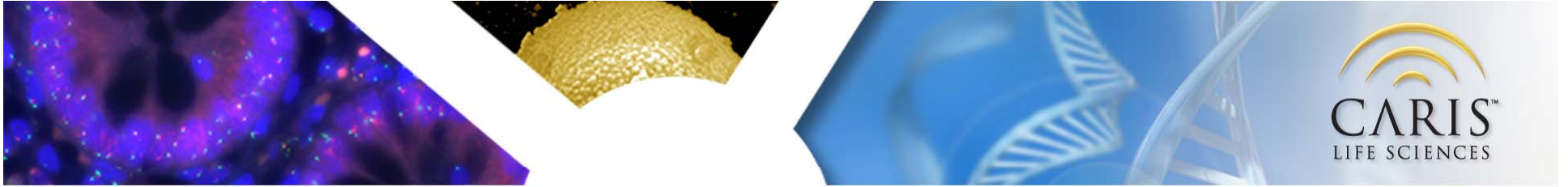
Geneticist Prerequisites

- PhD in field related to genetics (genetics, biochemistry, cell biology, etc.)
- Clinical genetics fellowship – 2 year program
- Completion of a case logbook
- Pass the American Board of Medical Genetics exam
- Maintenance of certification



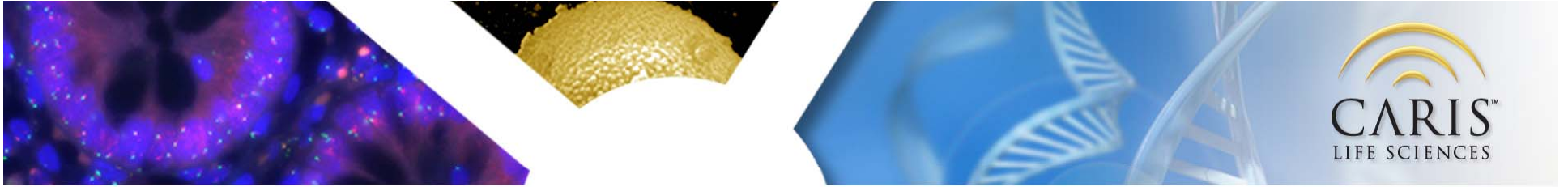
Laboratory Genetics Fellowships

- 2 year fellowship
- Very competitive
- Board preparation
- Case logbook preparation
- Successful completion of didactic courses



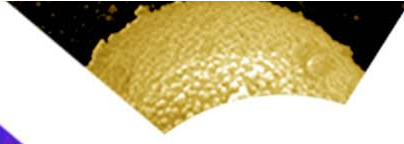
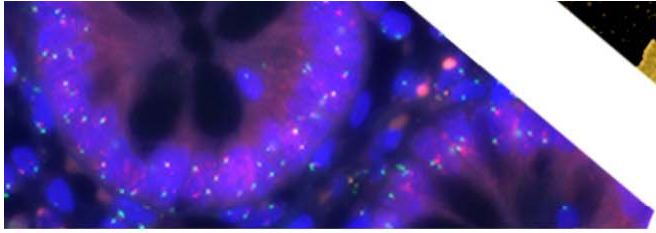
Fellowship Considerations

- Few open spots with many candidates
- Interviews are self-paid
- Typically start July 1st of every year
- Steep learning curve
- May require extended research
- Board expenses (\$2300 for single specialty in 2009)



Fellowship Acceptance Criteria

- Publication record
- Letter of recommendation
- Personal Statement
- Interview and research presentation



What if I Don't Get Accepted?

- Post doc
- Research fellowships
- Get involved in genetics
- Work with a mentor involved in a training program
- Offer to train unpaid or provide funding
- Try again next year

