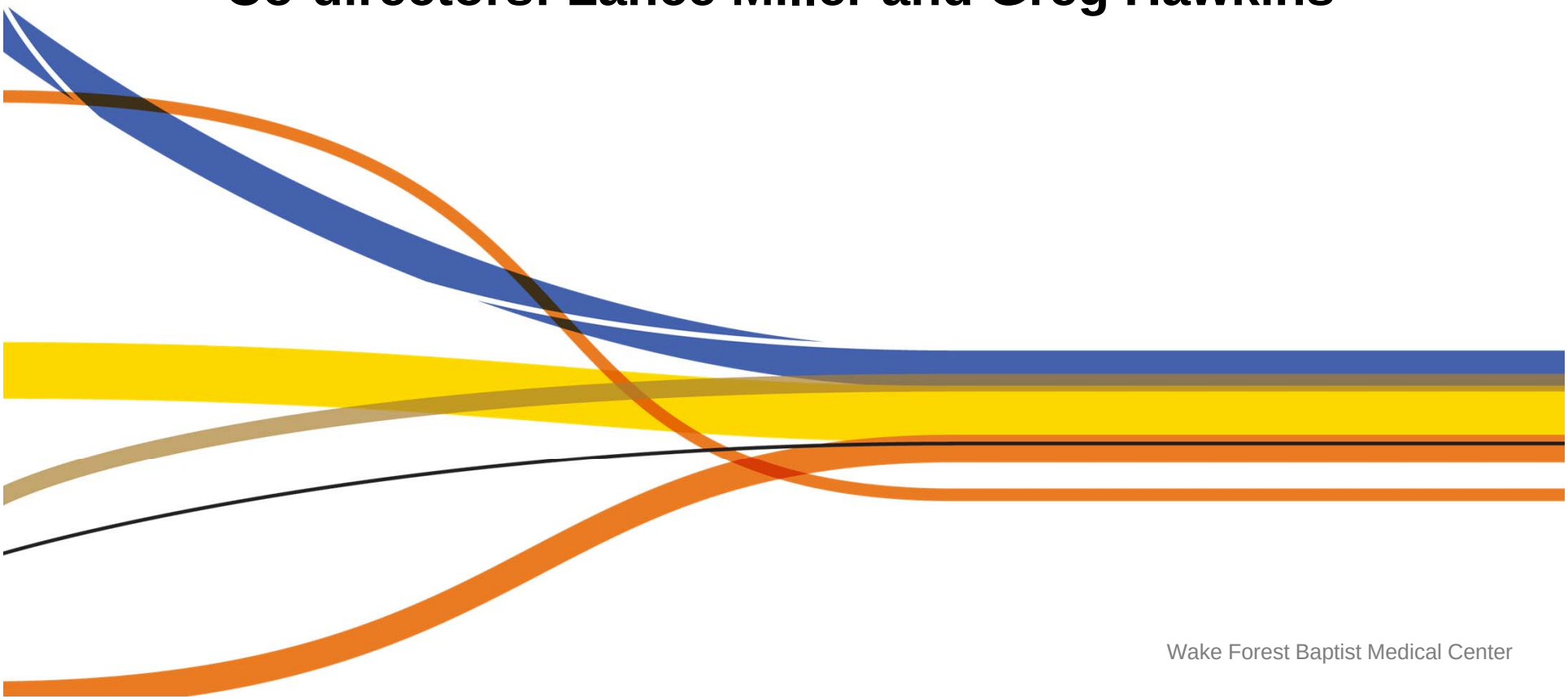
Cancer Genomics Core

Co-directors: Lance Miller and Greg Hawkins



Scientific Value and Focus of Core

- To provide state-of-the-art Next Gen sequencing and microarray technologies for comprehensive genomic, transcriptomic and epigenomic profiling
- To support basic, translational and clinical research efforts, including our precision medicine initiative
- To create a unifying environment around genomics, bioinformatics and systems biology
- To promote multi-disciplinary collaboration, new grant development and generation of IP

CGC Services Available

- **Expression Profiling (NGS (RNA-Seq), Array)**
  - whole transcriptome, targeted gene panels: *mRNA/microRNA/lncRNA, splice variants, gene fusions, allele specific expression, genetic variants*
- **Genome Sequencing (NGS, Array)**
  - whole genome, whole exome, targeted panels: *SNP, mutation, copy number alteration, methylation, ChIP-Seq/CHIP*
- **RNA/DNA Extraction (for downstream profiling)**
  - FFPEs, FNAs, core Bx, frozen sections
- **RNA/DNA Integrity Analysis (Bioanalysis)**
- **Bioinformatics**
  - Data processing and “level 1” analysis

CGC Primary Shared Equipment

- Illumina NextSeq 500 NGS
- Illumina MiSeq NGS
- Affymetrix GeneAtlas Microarray System
- Affymetrix GeneChip Scanner 3000 7G 4C
- Life Technologies SOLiD 5500 XL-W NGS
- ABI 3730XL Capillary Sequencer
- Qiagen Pyromark MD 96 pyrosequencer
- Agilent 2100 Bioanalyzer
- Life Tech Qubit Fluorometer

Illumina NextSeq 500

- **Up to 400 million reads (high throughput)**
- **Up to 130 million read (mid throughput)**
- **Data format: base-space**
  - fastq, fasta, BAM, VCF
  - 1 base pair sequencing
- **Run times** (11-29 hours)
- **Manual library construction**
- **Read lengths**: single 1 X 50 to 1 X 150 bp
  - paired up to 2 X 150 bp
- **Capacity: High throughput**
  - 1 genome (20-30 X coverage)
  - 8 RNAseq (up to 50 million reads)
  - >9 exomes (>30X coverage)
- **Capacity: Mid-throughput**
  - 3 exomes (>30X coverage)
  - 3 RNAseq (up to 40 million reads)
- **Data analysis**
  - BaseSpace (individual accounts)
  - Galaxy
  - Off-line: GATK, BWA, Bowtie, Cufflinks
    - Tophat, (lot's of others)

Contact Information

- *Directors:* Lance D. Miller, Greg A. Hawkins
- *Staff:* Lou Craddock, Wei Cui, Jeff Chou
- *Location:* Hanes 4026/4028, NRC 311/316
- *Contact email:*

  ldmiller@wakehealth.edu

  ghawkins@wakehealth.edu

  lcraddoc@wakehealth.edu

- *Lab Phone Number:* 713-5103