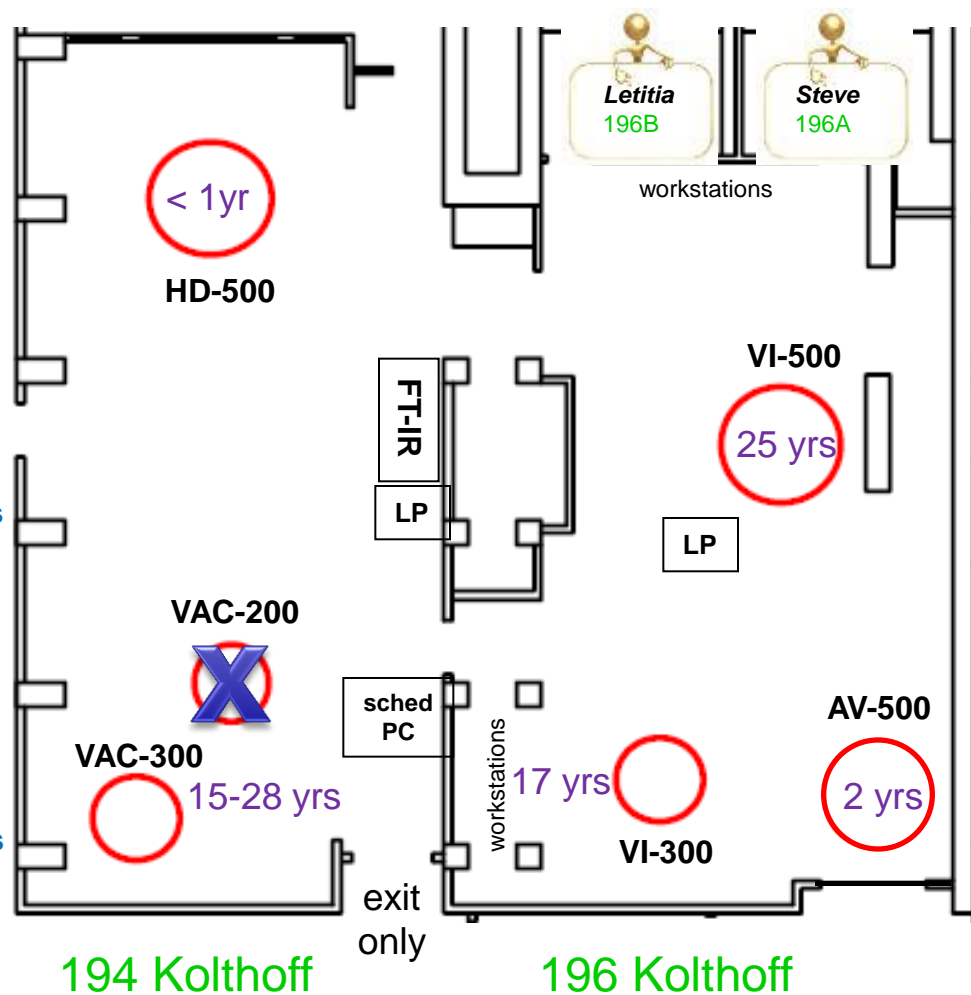


# Current NMR Facility



- HD-500**
- $^1\text{H}/^{13}\text{C}/^{19}\text{F}$
  - Autosampler
  - Prodigy cryoprobe
  - Best S/N for all nuclei
  - no VT

- VAC-200**
- Autosampler
  - Teaching lab samples
  - Undergrad researchers
  - New grad students
  - "Occasional" Users
  - Dead 2014

- VAC-300**
- Autosampler
  - Teaching lab samples
  - Undergrad researchers
  - New grad students
  - "Occasional" users

**Staff**

- Yao is full time
- Philson part time/retired
- 1 TA: cryogens, autosampler training teaching & industry samples, occasional instrument maintenance

**VI-500**

- $^1\text{H}/^{13}\text{C}$  only
- no VT

**AV-500**

- Multinuclear
- "short" VT experiments
- Autosampler

**VI-300**

- $^1\text{H}/^{13}\text{C}/^{19}\text{F}/^{31}\text{P}$
- "longer" VT experiments
- lower field better for coalescing
- VT wear & tear hard on probes

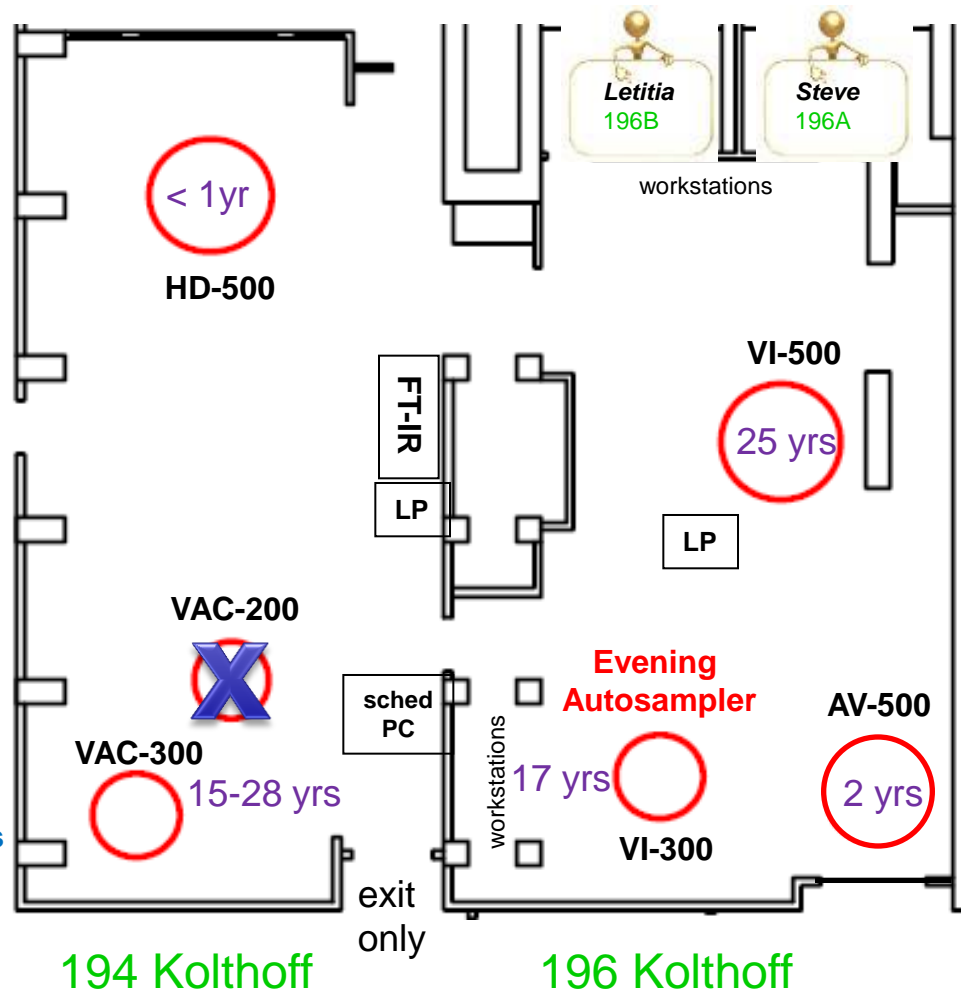
# NMR Lab Missions

- Support research mission; enable faculty research programs
  - Train users in common experiments (PD/Grad/UG)
  - Assist in exotic/uncommon experiments
  - Maintain NMR capabilities & quick access to data
- Support teaching mission for chemistry instructional labs
  - Large volume for Chem 2311 (1000's of samples per semester)
  - Variety of experiments for Chem 2312, 4311, 4711, 4223

# Current Challenges

- Loss of VAC-200
  - Samples from teaching lab have overwhelmed capacity on easy-to-use walk-up autosampler
  - Teaching sample back-log
  - Research samples from users only trained on VAC-300 & VAC-200 get data slowly
- Other Aging Equipment
  - VAC-300, VI-300, VI-500 are susceptible to failure, repair feasible for the mid-term
  - Training time long, learning curve is steeper than it once was (incoming students: no command prompt experience)

# Near-Term NMR Facility



## HD-500

- $^1\text{H}/^{13}\text{C}/^{19}\text{F}$
- Autosampler
- Prodigy cryoprobe
- Best S/N for all nuclei
- no VT

## VAC-200

- Decommissioned

## VAC-300

- Autosampler
- Teaching lab samples
- Undergrad researchers
- New grad students
- "Occasional" users

## Staff

- Yao is full time
- Philson part time/retired
- 1 TA: cryogens, autosampler training teaching & industry samples, occasional instrument maintenance
- Temporary staff (TA? Part-time P&A?)

## VI-500

- $^1\text{H}/^{13}\text{C}$  only
- no VT

## AV-500

- Multinuclear
- "short" VT experiments
- Autosampler

## VI-300

- $^1\text{H}/^{13}\text{C}/^{19}\text{F}/^{31}\text{P}$
- "longer" VT experiments
- lower field better for coalescing
- VT wear & tear hard on probes
- Evening autosampler

# Long Term Considerations

- Replace aging instrumentation
  - From 200 + 300 + 300 + 500
    - VAC-200: down
    - VAC-300: no spare parts, ~7 min/sample
    - VI-300 and VI-500: have spare parts to keep running for some time
  - To 400 + 400
    - One 400 MHz w/ autosampler should meet our teaching & UG research mission (<3 min/sample for 1D  $^1\text{H}$  spectrum)
    - One 400 MHz for research

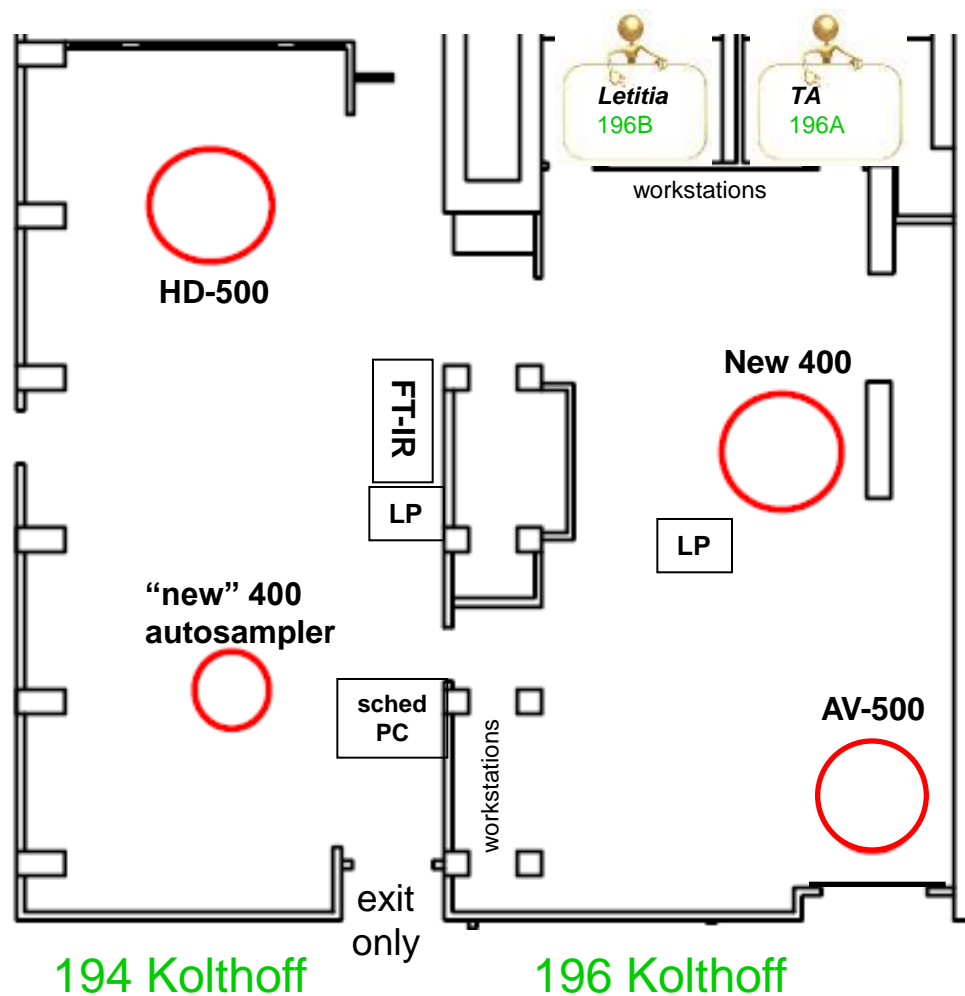
# Long-Term Future NMR Facility

## HD-500

- $^1\text{H}/^{13}\text{C}/^{19}\text{F}$
- Autosampler
- Prodigy cryoprobe
- Best S/N for all nuclei
- no VT

## New 400 autosampler

- Teaching labs
- Undergrad researchers
- New grad students



## Staff

- Yao
- 1 TA: cryogenics, autosampler & hands on training teaching & industry samples, occasional instrument maintenance

## New 400

- Multinuclear
- "long" VT experiments

## AV-500

- Multinuclear
- "short" VT experiments
- Autosampler