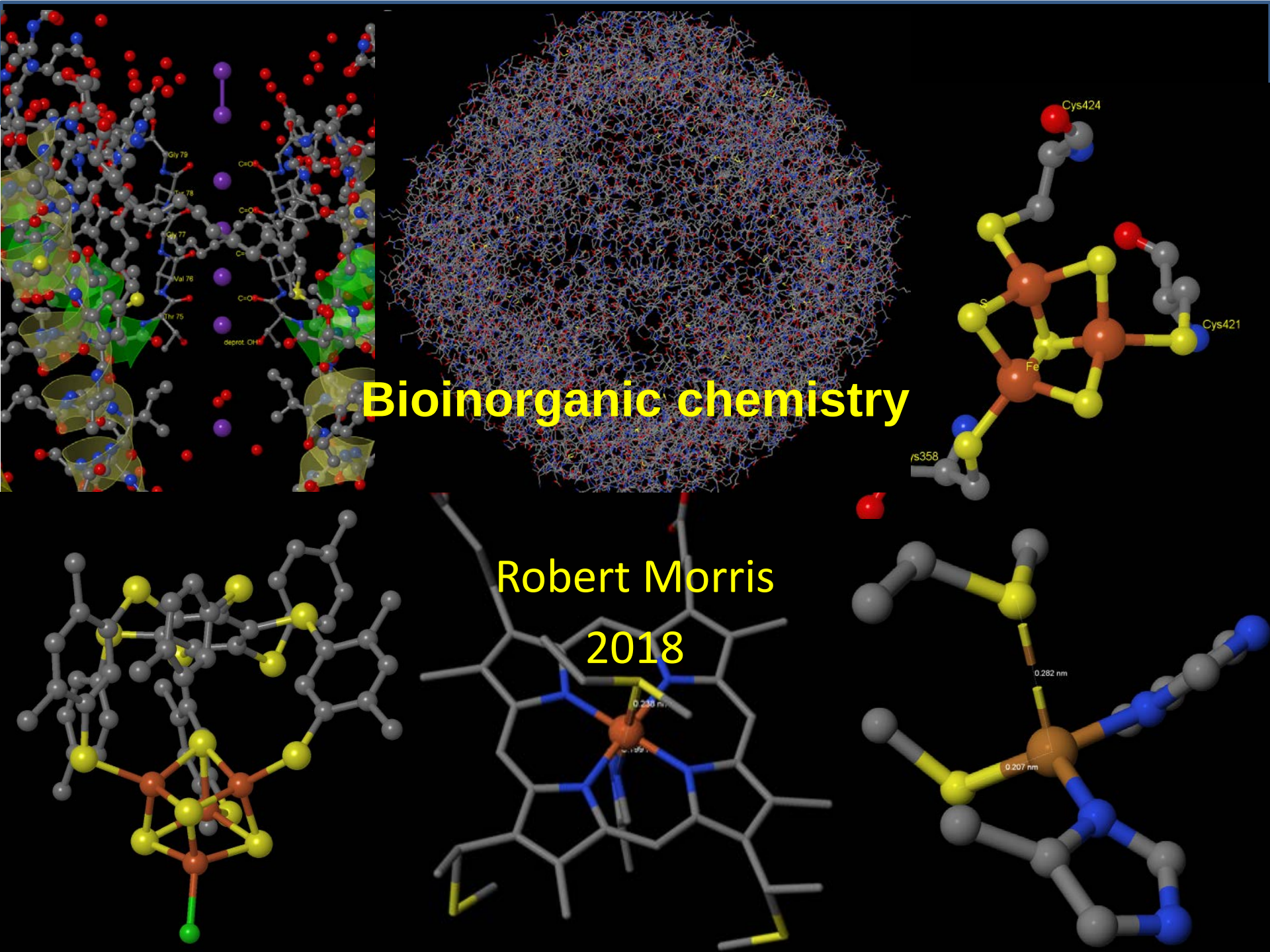
Bioinorganic chemistry
Robert Morris
2018
Cys424
Cys421
Fe
0.282 nm
0.207 nm

CHM437/1263 Bioinorganic Chemistry

- Prof. Robert Morris
- Email: rmorris@chem.utoronto.ca
- Phone: 416-978-6962
- Office: DB344, 4-5 Mondays
- Lecture Time and location: Tuesday 4:00-5:00, LM -TBA
- Thursday 4:00-5:00, LM- TBA

- Textbook: Biological Inorganic Chemistry , 2nd ed., Robert R. Crichton, 2012 (available on-line through the UoT library: http://go.utlib.ca/cat/8390276

Ref./Acknowl.:

Topics Covered in This Course

- Metals and non metals in biology and in the environment; the availability of metal ions and its effect on evolution
- Biological ligands for metal ions
- Metal assimilation pathways
- Transport, storage and homeostasis of metal ions
- Acquiring iron- essential for life
- Metals for non-redox enzymes – Mg^{2+}, Zn^{2+}, Cd^{2+}
- Metallochaperones/metalloregulators
- Electron carriers– iron sulfur clusters
- Electron carriers – cytochromes and copper proteins
- Respiration – iron and copper enable “cold combustion”
- Photosynthesis – manganese, iron and copper enable dioxygen formation and chemical energy storage
- Hydrogenase – bacteria powered by hydrogen gas and enabled by iron and nickel
- Nitrogenase – bacteria enabled by iron and molybdenum hydrogenate one of the strongest bonds in chemistry – dinitrogen
- Metal-based drugs
- Summary

Ref./Acknowl.:

Other useful texts

- Housecroft and Sharpe, Inorganic Chemistry, Fourth edition, Chapters 29, 2012
- Bertini, Gray, Steifel, Valentine, BIOLOGICAL INORGANIC CHEMISTRY. STRUCTURE AND REACTIVITY, University Science Books, 2007
- Lippard and Berg, Principles of Bioinorganic Chemistry, University of Science books, 1994.
- The Biological Chemistry of the Elements J.J. R. Frausto da Silva and R.J. P. Williams 1994.

Ref./Acknowl.:

Guided Tours of Metalloproteins

- http://www.chem.utoronto.ca/coursenotes/GTM/main.htm

This site is currently under construction but should be ready for use in the course

Ref./Acknowl.:

Evaluation

1. Problem Set: Due Feb 13 — 20 marks
2. Abstract of presentation: — 5 marks
   Due: March 8
3. Presentations: — 30 marks
   Weeks of March 19 and 26
4. Final Exam — 45 marks

Late penalty: 20% off per day

Ref./Acknowl.: