

# Aaron M. Leconte

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Assistant Professor of Chemistry  
Keck Science Department  
Claremont McKenna, Pitzer, and Scripps Colleges  
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## Professional Experience

Assistant Professor of Chemistry, Keck Science Department, 2012-present  
Claremont McKenna, Pitzer, and Scripps Colleges  
Discovery and characterization of novel enzyme activities in (i) Taq DNA polymerase I and (ii) firefly luciferase.

NIH Postdoctoral Fellow, Department of Chemistry and Chemical Biology, Harvard University 2009-2012  
*Advisor: David R. Liu*  
(i) Identification and characterization of small molecule-RNA conjugates in biological systems using liquid chromatography/mass spectrometry. (ii) Development and application of continuous evolution as a model system of protein evolution.

## Education

Ph.D., Chemical Biology, The Scripps Research Institute 2009  
*Advisor: Floyd E. Romesberg*  
(i) Expansion of the genetic alphabet through development of a third, orthogonal DNA base pair using synthetic chemistry, screening, enzymology, and directed evolution of DNA polymerases. (ii) Engineering of DNA polymerases for high throughput sequencing through directed evolution.

B.A., Chemistry, Carleton College 2004  
*Advisor: David G. Alberg*  
Design and synthesis of trypanothione analogues for inhibition of Trypanothione Reductase, a key enzyme for parasites of the genera Trypanosoma.

## External Research Funding

**Cottrell Scholar Award (Research Corporation for Science Advancement)**, “Biochemical characterization and engineering of luciferases through Statistical Coupling Analysis”, Principal Investigator, \$100,000 (2016-2019)

**Ellen Browning Scripps Foundation**, “Acquisition of a Fluorimeter for Undergraduate Instruction and Research”, co-Principal Investigator, \$20,000 (2016)

**Cottrell College Science Award (Research Corporation for Science Advancement)**, “Biochemical characterization and engineering of Taq DNA polymerase mutants for the synthesis of 2’modified DNA”, Principal Investigator, \$50,200 (2014-2016)

**TriLink ResearchRewards Grant (TriLink Biotechnologies)**, “Discovery and Characterization of New Mutant DNA Polymerase - Modified Substrate Interactions”, Principal Investigator, \$10,000 (2013-2015)

**S.D. Bechtel, Jr. Foundation**, “Funding for purchase of a biomolecular gel imager”, co-Principal Investigator, \$50,000 (2011).

**Ruth L. Kirchstein National Research Service Award (National Institutes of Health)**. “Identification and Characterization of Small Molecule-RNA Conjugates in Yeast”, Principal Investigator, \$87,782 (2010-2012)

### External Educational Funding

**Jean Dreyfus Lectureship for Undergraduate Institutions**, “Applying molecular evolution to solve chemical problems – funding to bring Prof. David R. Liu to the Claremont Colleges”, co-lead Principal Investigator, \$18,500 (2017-2018)

### Internal Research Funding

**Keck Department Grant**, “Comparative characterization and engineering of modified-DNA polymerases”, Principal Investigator, \$15,000 (2017-2020)

**Claremont Colleges’ Collaborative HHMI Undergraduate Science Education Award**, “Structure and function of DNA polymerases with evolved unnatural substrate recognition”, co-Principal Investigator, \$13,000 (2014)

### Awards

2016	Cottrell Scholar Award
2014	Cottrell College Science Award
2010	NIH Ruth L. Kirchstein National Research Service Award
2008	ACS Division of Biological Chemistry Travel Award
2007	ARCS Foundation Fellowship
2006	Best Poster, Graduate Retreat, Chemistry (TSRI)
2006	Lesly Starr Shelton Award for Excellence in Chemistry Graduate Studies (TSRI)
2004	Franz Exner Award for Excellence in Chemistry (Carleton College)
2001	Dow Chemical Company Foundation Scholarship

### Publications

(underline indicates undergraduates from Claremont Colleges, \* indicates equal author contribution)

1. M. D. Liu\*, E. A. Warner\*, C. A. Morrissey, C. W. Fick, T. S. Wu, M. Y. Ornelas, G. V. Ochoa, B. Zhang, C. M. Rathbun, W. B. Porterfield, J. A. Prescher, and **A. M. Leconte**. Statistical Coupling Analysis-guided library design for discovery of mutant luciferases, *Biochemistry (in press)*.
2. E. L. Lewis and **A. M. Leconte**, (2017). DNA polymerase activity assay using near-infrared fluorescent labeled DNA visualized by acrylamide gel electrophoresis, *Journal of Visualized Experiments*, **128**, e56228.
3. S. L. Rosenblum, A. G. Weiden, E. L. Lewis, A. L. Ogonowsky, H. E. Chia, S. E. Barrett, M. D. Liu, and **A. M. Leconte**, (2017) Design and discovery of new combinations of mutant DNA polymerases and modified DNA substrates, *ChemBiochem*, **18**, 816.
4. H. J. Schultz, A. M. Gochi, H. E. Chia, A. L. Ogonowsky, S. Chiang, N. Filipovic, A. Weiden, E. E. Hadley, S. E. Gabriel, and **A. M. Leconte**, (2015) Taq DNA polymerase mutants and 2' modified sugar recognition, *Biochemistry*, **54**, 5999.
5. **A. M. Leconte**, B. C. Dickinson, D. D. Yang, I. A. Chen, B. Allen, and D. R. Liu, (2013) A population-based experimental model for protein evolution: effects of mutation rate and selection stringency on evolutionary outcomes, *Biochemistry*, **52**, 1490.

6. B. C. Dickinson, **A. M. Leconte**, K. M. Esvelt, B. Allen, and D. R. Liu, (2013) Experimental interrogation of the path dependence and stochasticity of protein evolution, *Proc. Natl. Acad. Sci.* **110**, 9007.
7. C. E. Dumelin, Y. Chen, **A. M. Leconte**, Y. G. Chen, and D. R. Liu, (2012) Discovery and biological characterization of geranylated RNA in bacteria, *Nature Chemical Biology*, **11**, 913.
8. M. H. Duyzend, C. T. Clark, S. L. Simmons, W. B. Johnson, A. M. Larson, **A. M. Leconte**, A. W. Willis, M. Ginder-Vogel, A. K. Wilhelm, J. A. Czechowicz, and D. G. Alberg, (2012) Synthesis and evaluation of substrate analogue inhibitors of trypanothione reductase, *J. Enzyme Inhib. Med. Chem.*, **6**, 784.
9. **A. M. Leconte**, M. P. Patel, L. E. Sass, P. McInerney, M. Jarosz, L. Kung, J. L. Bowers, P. R. Buzby, J. W. Efcavitch, and F. E. Romesberg, (2010) Directed evolution of DNA polymerases for next generation sequencing, *Angew. Chem. Int. Ed.*, **34**, 5921.
10. **A. M. Leconte** and F. E. Romesberg. *Invited book chapter*, (2009) Development of unnatural DNA base pair systems, in *Protein Engineering* (Springer).
11. Y. Hari, G. T. Hwang, **A. M. Leconte**, N. Joubert, M. Hocek and F. E. Romesberg, (2008), Optimization of the pyridyl nucleobase scaffold for polymerase recognition and unnatural base pair replication, *Chembiochem*, **9**, 2796.
12. **A. M. Leconte**, G. T. Hwang, S. Matsuda, P. Capek, Y. Hari, and F. E. Romesberg, (2008) Discovery, characterization, and optimization of an unnatural base pair for expansion of the genetic alphabet, *J. Am. Chem. Soc.* **130**, 2336.
13. G. T. Hwang, **A. M. Leconte**, and F. E. Romesberg, (2007) Polymerase recognition and stability of fluoro-substituted pyridone nucleobase analogues. *Chembiochem.*, **8**, 1606.
14. S. Matsuda, **A. M. Leconte**, and F. E. Romesberg, (2007) Minor groove hydrogen bonds and the replication of unnatural base pairs. *J. Am. Chem. Soc.*, **129**, 5551.
15. **A. M. Leconte** and F. E. Romesberg. *Invited commentary*, (2006) Chemical biology: a broader take on DNA. *Nature*, **444**, 553.
16. **A. M. Leconte** and F. E. Romesberg. *Invited commentary*, (2006) Amplify this! DNA and RNA get a third base pair. *Nature Methods*, **3**, 667.
17. **A. M. Leconte**, S. Matsuda, and F. E. Romesberg. (2006) An efficiently extended class of unnatural base pairs. *J. Am. Chem. Soc.*, **128**, 6780.
18. Y. Kim, **A. M. Leconte**, Y. Hari, and F. E. Romesberg. (2006) Stability and polymerase recognition of pyridine nucleobase analogs. *Angew. Chem. Int. Ed.*, **45**, 7809.
19. **A. M. Leconte**, S. Matsuda, G. Hwang, and F. E. Romesberg. (2006) Efforts toward expansion of the genetic alphabet: methyl pyridone and pyridone nucleobases. *Angew. Chem. Int. Ed.*, **45**, 4326.
20. **A. M. Leconte**, L. Chen, and F. E. Romesberg. (2005) Polymerase evolution: efforts toward expansion of the genetic code. *J. Am. Chem. Soc.*, **127**, 12470.

## Teaching Experience

Keck Science Department, Department of Chemistry, Instructor

CHEM14L: Introduction to Chemistry Lab (lab only)	Fall '12, '13
CHEM29L: Accelerated General Chemistry (lecture only)	Fall '14
CHEM40L: Introduction to Biological Chemistry	Fall '15, '16, '17
CHEM127L: Advanced Laboratory II	Spring '13, '14, '15, '17
CHEM177/BIO177: Biochemistry	Fall '12, '13, '14, Spring '15, '18
CHEM180: Applied Biomolecular Evolution	Spring '14, '18

The Scripps Research Institute, Department of Chemistry, Teaching Assistant

Spectroscopy for Organic Chemists	Winter '06, '07
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Carleton College, Department of Chemistry, Teaching Assistant

Principles of Chemistry (twice); Advanced Laboratory II:	2003-2004
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### Undergraduate students mentored

(\*students who have co-authored publications; <sup>1</sup>joint student with Prof. Andre Cavalcanti, Pomona College; <sup>2</sup>joint student with Prof. Matthew Sazinsky, Pomona College)

- **Whitney Lieberman** (CMC '20) 2018-present.
- **Lauren Clubb** (CMC '18) 2017-present.
- **Kinsey Lee** (SCR '20) 2017-present.
- **Kristi Lee** (SCR '20) 2017-present.
- **\*Marya Ornelas** (PIT '20) 2017-present.
- **\*Susanna Barrett** (SCR '19) 2016-present.
- **Michelle Cao** (CMC '19) 2016-2016 / *currently*: CMC student pursuing public health.
- **Owen Chapman**<sup>1</sup> (POM '17) 2016-2017 / *currently*: Ph.D. student (University of California – San Diego, Systems Biology).
- **\*Caitlyn Fick** (Scripps '19) 2016-2017.
- **Ellery Koelker-Wolfe**<sup>2</sup> (CMC '19) 2016-present.
- **\*Eliza Lewis** (SCR '17) 2016-2017 / *currently*: Research Assistant in Baron Lab (Mt. Sinai).
- **\*Charlotte Morrissey** (CMC '19) 2016-present.
- **Catherine Chiang**<sup>2</sup> (SCR '16) 2015-2015 / *currently*: data analyst, Downtown Emergency Service Center, Seattle WA.
- **\*Mira Liu** (CMC '18) 2015-present.
- **\*Sydney Rosenblum** (SCR '17) 2015-2017 / *currently*: Ph.D. student (University of Michigan, Chemical Biology).
- **\*Elliot Warner** (CMC '18) 2015-present.
- **\*Taia Sean Wu** (SCR '15) 2015-2015 / *post-graduation*: Research Assistant in Bertozzi Lab (Stanford); *currently*: Ph.D. student (University of California - San Francisco, Chemical Biology).
- **\*Sharon Chiang** (CMC '17) 2014-2014 / *currently*: Consultant at Triage Consulting Group.
- **\*Nedim Filipovic** (CMC '17) 2014-2014 / *currently*: CMC graduate pursuing science business.
- **\*Aurora Weiden** (SCR '17) 2014-2017 / *currently*: Research Assistant in Brumback Lab (UT-Austin).
- **Constanza Jackson** (SCR '15) 2013-2014 / *currently*: Research Assistant in Guttman Lab (Caltech).
- **Jacqueline Kroll**<sup>2</sup> (CMC '15) 2013-2015 / *post-graduation*: veterinary technician; *currently*: D.V.M. student (University of California – Davis).
- **\*Hannah Chia** (SCR '16) 2013-2015 / *currently*: Ph.D. student (University of Michigan, Chemical Biology).
- **\*Emma Hadley** (SCR '14) 2013-2014 / *post-graduation*: Research Assistant in Lee Lab (University of Southern California); *currently*: M.D. student (Tufts University).
- **\*Alexie Ogonowsky** (SCR '16) 2013-2015 / *post-graduation*: Marketing Associate at Protein Simple; *currently*: M.B.A. student (Notre Dame University).
- **\*Sara Gabriel** (CMC '15) 2012-2013 / *currently*: Consultant at Cambridge Associates.
- **\*Andrea Gochi** (PIT '14) 2012-2014 / *post-graduation*: Lab Manager at Vaccine Research Center (Pitzer College); *currently*: M.D. student (University of California – Riverside).
- **\*Hayley Schultz** (CMC '15) 2012-2015 / *post-graduation*: Research Assistant at Breast Care Center Project (UCSF); *currently*: M.D. student (University of California – San Francisco).
- **Alfredo Valencia**<sup>2</sup> (PIT '14) 2012-2014 / *currently*: Ph.D. candidate (Harvard University, Chemical Biology).
- **\*David Yang** (Harvard '13) 2010-2012 / *currently*: M.D. student at Harvard Medical School
- **\*Meha Patel** (TSRI, pre-graduate) 2007-2008 / *currently*: Ph.D. student at Baylor College of Medicine.