

Rebecca Alexander

Director of Academic Planning, Wake Downtown & Professor, Department of Chemistry at Wake Forest University

Winston-Salem, NC, US

Alexander combines scientific expertise and creativity to apply science across the curriculum.

Description

Rebecca Alexander combines her scientific expertise and innate creativity to apply science across a curriculum spanning chemistry, dance, and women's and gender studies. An expert in molecular biochemistry, she has published articles in journals such as *Biochemistry*, *Proceedings of the National Academy of Sciences (USA)* and *Journal of Molecular Biology*, but her work is anything but elemental. Alexander has channeled her expertise into developing courses that blend creativity, passion and a strong liberal arts spirit to get students excited about science.

Alexander's primary teaching responsibility is undergraduate and graduate biochemistry courses, but she has expanded her curriculum to include classes that incorporate her other interests as well. In her first-year seminar "Well-Behaved Women Rarely Make (Scientific) History," students learn about female scientists and the obstacles they have had to overcome. The course also includes a service-learning component in which students perform scientific experiments with and mentor middle school students in an after-school program. "Movement and the Molecular" uses dance to teach cellular processes, engaging students' - especially women's - minds and bodies in a more physical way. She has also co-taught dedicated women's and gender study courses and started a summer biochemistry study abroad program in London, England. Not only has Alexander's initiative provided non-traditional but valuable opportunities for students, but it has also stimulated her own curiosity in topics of women in science.

Topics

Biochemistry, Molecular Chemistry, Protein Structures, RNA-Protein Interactions, Protein Biosynthesis, Women in Science and STEM, Molecular dissection of aminoacyl-tRNA synthetase structure and function, Nucleic acid structure and function, Computational modeling of protein dynamics

Education

MIT and the Scripps Research Institute

Postdoctoral Research Physics

University of Pennsylvania

Ph.D. Chemistry

University of Delaware

B.S. Chemistry and Biology

Media Appearances

Olga Pierrakos appointed as founding engineering chairwoman in Wake Downtown

Winston-Salem Journal

2017-01-25

Rebecca Alexander, director of academic programming at Wake Downtown and a chemistry professor, believes one way to close that gap is to show students how the study of STEM fields can improve lives and change the world.

"Our challenge is to introduce world problems like drug delivery, water purification and energy usage, and teach students to care about them and apply their knowledge to solving them," Alexander said.

Classes start at Wake Downtown in the Innovation Quarter

Winston-Salem Journal

2017-01-10

Administrators at Wake Forest are calling Wake Downtown, which began classes Tuesday, a new era for the university as it moves some undergraduate courses into the Innovation Quarter in downtown Winston-Salem.

Wake Forest University marks milestone with opening of downtown campus

Spectrum News

2017-01-10

It was a historic day Tuesday for Wake Forest University, as it opened a brand new campus in downtown Winston-Salem. The university is now a part of Winston-Salem's Innovation Quarter, making its home in one of RJ Reynolds' former tobacco buildings.

"We think it's important to be a part of the city in ways that going forward will make us even more distinctive as an institution," said Director of Academic Programming Rebecca Alexander. "The medical school is already downtown. Now we're rejoining the medical school by being a part of downtown."

Sweetly salvaged

Winston-Salem Monthly

2012-08-01

Rebecca Alexander will be the first one to tell you cooking is all about chemistry--a mix of varied ingredients creating something singular and new. It's safe to say she knows what she's talking about: In addition to enjoying baking, she is a Wake Forest University chemistry professor.

Her husband, Rob, agrees that chemistry is key, and he also believes the same can be said for a house remodel, where a mix of vintage and salvaged materials can combine to create a home singular in taste and beauty.

Alexander is anything but elemental

Old Gold & Black

2012-01-20

In July 2007, Rebecca Alexander became an associate professor in the chemistry department. Alexander celebrated and was relieved to receive tenure, but found herself in an interesting position. She had to do a life-check.

"Now that I don't have tenure looming over my head, I have a little more freedom. So what can I use that freedom for?" Alexander said to herself four years ago. "What am I going to do with the rest of my life?"

Articles

Using molecular dynamics to map interaction networks in an aminoacyl-tRNA synthetase

Proteins: Structure, Function, and Bioinformatics

Long-range functional communication is a hallmark of many enzymes that display allostery, or action-at-a-distance. Many aminoacyl-tRNA synthetases can be considered allosteric, in that their trinucleotide anticodons bind the enzyme at a site removed from ...

Community structure in time-dependent, multiscale, and multiplex networks

Journal of Bacteriology

The Escherichia coli cold shock protein CsdA is a member of the DEAD box family of ATP-dependent RNA helicases, which share a core of nine conserved motifs. The DEAD (Asp-Glu-Ala-Asp) motif for which this family is named has been demonstrated to ...

Unique base-step recognition by a platinum-acridinylthiourea conjugate leads to a DNA damage profile complementary to that of the anticancer drug cisplatin

Biochemistry

The sequence specificity and time course of covalent DNA adduct formation of the novel platinum-acridine conjugate [PtCl(en)(ACRAMTU)](NO₃)₂ [PT-ACRAMTU, 2; en= ethane-1, 2-diamine, ACRAMTU= 1-[2-(acridin-9-ylamino) ethyl]-1, 3-dimethylthiourea] have been ...

Domain-domain communication in aminoacyl-tRNA synthetases

Progress in Nucleic Acid Research and Molecular Biology

Aminoacyl-tRNA synthetases are modular proteins, with domains that have distinct roles in the aminoacylation reaction. The catalytic core is responsible for aminoacyl adenylate formation and transfer of the amino acid to the 3' end of the bound transfer ...

Ribosomal components neighboring the conserved 518-533 loop of 16S rRNA in 30S subunits

Biochemistry

We report the synthesis of a radioactive, photolabile oligodeoxyribonucleotide probe complementary to 16s rRNA nucleotides 518-526 and its exploitation in identifying 30s ribosomal subunit components neighboring its target site in 16s rRNA. Nucleotides ...

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