Prof David A. Snyder

William Paterson University

Chemistry

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## Education

PhD, Rutgers, 2006.

Major: Biochemistry

Dissertation Title: Application of Statistical Methods in Structural Bioinformatics and their Use in Solution NMR Studies of Ribosomal Protein L35AE

BS, UC Irvine, 1999.

Major: Biology; Mathematics

Dissertation Title: Experiments and Experimental Structures: A Formalism for Analyzing Data Obtained from Chemical Libraries

## Teaching Experience

Courses Taught Include:

CHEM 4990 and BIO 7000, INDEPENDENT STUDY

CHEM 1330, CHEMISTRY FOR HEALTH SCIENCES

CHEM 4270, BIOCHEMISTRY

CHEM 4280, BIOCHEMISTRY II

CHEM 6000, GRAD SEMINAR RES MTHDS and LIT

CHEM 6004, THEO AND PHYS METHODS

CHEM 4440/CHEM 6002 (combined lecture for) MEDICINAL CHEMISTRY and ORGANIC MATERIALS CHEMISTRY

## Research

## Published Intellectual Contributions

Book Chapters, Editorials and Reviews

Snyder, D.A. (2023). Signal Processing for Highly Resolved 2D NMR. *Fast 2D Solution-State NMR.* Royal Society of Chemistry.

Snyder, D.A. (2020). Covariance NMR: Theoretical concerns, practical considerations, contemporary applications and related techniques. *Progress in Nuclear Magnetic Resonance Spectroscopy*, *122*, 1 - 10.

Blinov, K., Martin, G., Snyder, D. A., Williams, A. J. (2017). Covariance NMR. *Fast NMR Data Acquisition (New Developments in NMR)* (1st Edition ed.). Royal Society of Chemistry.

Snyder, D. A., Brüschweiler, R. (2015). Multi-dimensional Spin Correlations by Covariance NMR. *Modern NMR Approaches to the Structure Elucidation of Natural Products* (vol. 1: Instrumentation and Software, pp. 244-258). Royal Society of Chemistry.

Snyder, D. A., Brüschweiler, R. (2009). Multidimensional correlation spectroscopy by covariance NMR. *eMagRes (Encyclopedia of Magnetic Resonance)*. John Wiley & Sons, Ltd.

Snyder, D. A., Bhattacharya, A., Huang, Y. J., Montelione, G. T. (2005). Assessing precision and accuracy of protein structures derived from NMR data. *Proteins: Structure, Function and Genetics*, *59*, 655–661.

Selected Refereed Journal Articles

ORCID: https://orcid.org/0000-0001-6608-2975

Google Scholar: https://scholar.google.com/citations?user=\_Y2QjMgAAAAJ&hl=en&oi=sra

Patnala, S.V., Robles, R., & Snyder, D.A. (2024) "Application of CoLD-CoP to Detecting Competitively and Cooperatively Binding Ligands." *Biomolecules* *14*, 1136.

Reinknecht, C., Riga, A., Rivera, J. A., & Snyder, D. A. (2021). Patterns in Protein Flexibility: A Comparison of NMR “Ensembles,” MD Trajectories, and Crystallographic B-Factors. *Molecules*, *26* (Special Issue: "The Conformational Universe of Proteins and Peptides: Tales of Order and Disorder"), 1484.

Sala, D., Huang, Y. J., Cole, C. A., Snyder, D. A., Liu, G., Ishida, Y., Swapna, G., Brock, K. P., Sander, C., Fidelis, K., others (2019). Protein Structure Prediction Assisted with Sparse NMR Data in CASP13. *Proteins: Structure, Function and Bioinformatics, 87*, 1315–1332.

Snyder, D. A. (2019). On bounding the Thompson metric by Schatten norms. *Cogent Mathematics & Statistics, 6*(1).

Vera, R., Synsmir-Zizzamia, M., Ojinnaka, S., Snyder, D. A. (2018). Prediction of protein flexibility using a conformationally restrained contact map. *Proteins: Structure, Function and Bioinformatics*, *86*, 1111-1116

Snyder, D. A., Chantova, M., Chaudhry, S. (2015). Analysis of ligand–protein exchange by Clustering of Ligand Diffusion Coefficient Pairs (CoLD-CoP). *Journal of Magnetic Resonance, 255*, 44–50.

Snyder, D. A., Grullon, J., Huang, Y. J., Tejero, R., Montelione, G. T. (2014). The expanded FindCore method for identification of a core atom set for assessment of protein structure prediction. *Proteins: Structure, Function, and Bioinformatics, 82*(S2), 219–230.

Snyder, D. A., Aramini, J. M., Yu, B., Huang, Y. J., Xiao, R., Cort, J. R., Shastry, R., Ma, L.-C., Liu, J., Rost, B., others (2012). Solution NMR structure of the ribosomal protein RP-L35Ae from Pyrococcus furiosus. *Proteins: Structure, Function, and Bioinformatics, 80*(7), 1901–1906.

Short, T., Alzapiedi, L., Brüschweiler, R., Snyder, D. A. (2011). A covariance NMR toolbox for MATLAB and OCTAVE. *Journal of Magnetic Resonance, 209*(1), 75–78.

Snyder, D. A., Brüschweiler, R. (2009). Generalized Indirect Covariance NMR Formalism for Establishment of Multi-Dimensional Spin Correlations. *The journal of physical chemistry. A, 113*(46), 12898.

Snyder, D. A., Zhang, F., Robinette, S. L., Bruschweiler-Li, L., Brüschweiler, R. (2008). Non-negative matrix factorization of two-dimensional NMR spectra: Application to complex mixture analysis. *The Journal of chemical physics, 128*(5), 02B601.

Andrec, M., Snyder, D. A., Zhou, Z., Young, J., Montelione, G. T., Levy, R. M. (2007). A large data set comparison of protein structures determined by crystallography and NMR: statistical test for structural differences and the effect of crystal packing. *Proteins: Structure, Function, and Bioinformatics, 69*(3), 449–465.

Snyder, D. A., Montelione, G. T. (2005). Clustering algorithms for identifying core atom sets and for assessing the precision of protein structure ensembles. *Proteins: Structure, Function, and Bioinformatics, 59*(4), 673–686.

Selected Software (a complete list of MATLAB software released by the Snyder research group may be found at https://www.mathworks.com/matlabcentral/profile/authors/1420896)

Snyder, D. A. (2021) *NMF Analysis of TOCSY Spectra*

 https://www.mathworks.com/matlabcentral/fileexchange/100029-analysetocsybynmf

Snyder, D. A. (2018). *2D NMR Simulation Tools*. https://www.mathworks.com/matlabcentral/fileexchange/66518-2d-nmr-simulation-tools

Snyder, D. A. (2017). *CoRe-CMAP Toolkit*. https://www.mathworks.com/matlabcentral/fileexchange/62724-core-cmap-toolkit

Snyder, D. A. (2015). *Clustering of Ligand Diffusion Coefficient Pairs (CoLD-CoP) Toolbox*. https://www.mathworks.com/matlabcentral/fileexchange/50123-clustering-of-ligand-diffusion-coefficient-pairs--cold-cop--toolbox

## Selected Presentations by Prof. Snyder and/or members of his research group

Uddin, J., Perez, C., Snyder, D.A. (Research Adviser (not present at conference)). 2025 Annual Undergraduate Research Symposium. “The Role of Tyrosinase in Detoxifying Aldehydes and Preventing Protein Carbonylation”. William Paterson University. (April 12, 2025). \*This poster placed first in the Biochemistry category

Findura, A., Ristovski, N., Snyder, D.A. (Research Adviser (not present at conference)). 2025 Annual Undergraduate Research Symposium. “Investigating Thiamine Fragmentation Using 2D NMR Spectroscopy”. William Paterson University. (April 12, 2025). \*This poster placed second in the Biochemistry category

Snyder, D. A., 2022 Shabbaton at Home, "Should We Get Credit for Mitzvot?," Forest Hills Jewish Center, Special event at house of worship (open to public, but online due to Covid-19), Forest Hills. (February 5, 2022).

Snyder, D. A., ACS Spring 2021 National Meeting and Exposition, "Docking studies on tyrosinase and SARS-CoV2 nsp16: Discovery of novel enzymatic activities and drug repurposing," American Chemical Society, Online. (April 12, 2021).

Snyder, D. A. (Panel Organizer/Leader), Martin, G. (Presenter), Frueh, D. (Presenter), Jaeger, M. (Presenter), Lafon, O. (Presenter), IVAN Research Round-table Workshop, "Current Perspectives in Covariance NMR," MR Resources, Online. (November 18, 2020).

Snyder, D. A. (Presenter, PI and Lead Author), Mehta, S., Reinknecht, C., Rensselaer Polytechnic Institute COVID19 Journal Club, "Repurposing Adenosine Receptor Agonists in Treating Covid-19," The Montelione Research Group, Online Informal Meeting. (June 12, 2020).

Plasencia, C. (Presenter), Snyder, D. A. (Research Adviser), GS-LSAMP 11th Annual Conference, "Predictions of Hydrophobic Surface, Solvation Energy and Protein Flexibility," Garden State Louis Stokes Alliance for Minority Participation, Rutgers University, New Brunswick, NJ, United States. (October 11, 2019).

Snyder, D. A., 2018 Shabbaton, "Thou shalt not sow thy field with two kinds of seed: Halacha of GMOs, grafting and other agricultural practices," Forest Hills Jewish Center. (December 8, 2018).

Vera, R. (Presenter), Snyder, D. A. (Research Adviser (not present at conference)), 2017 STEM C2 Research Summit, "Heuristic of Predicting Protein Flexibility," Bergen Community College. (April 21, 2017).

## Service

Convener, University Core Curriculum (UCC) Area J (Data Analysis) Review Panel (April 2024 – Present).

WPUNJ Faculty Senate. Chemistry Department Representative (May 2010 - Present). At Large Member, Senate Executive Committee (May 2023 – May 2024). Senate Vice Chair (May 2024 – Present).

Member, College of Science and Health Curriculum Committee (September 2022 - Present).

Club (Co) Advisor, WPUNJ Hillel. (September 2017 - Present).

Chairperson, Chemistry Department Assessment Committee. (September 2008 - Present).

Member, Pre-Professional Committee. (September 2008 - Present).

College of Science and Health Representative, University Core Curriculum (UCC) Council. (October 2016 - May 2017).

Volunteer, Montgomery Upper Middle School FIRST Lego League Robotics Team, Skillman, NJ. (November 6, 2017 - November 18, 2017).