




## Clyde Smith

Sr Research Engineer

Chemistry

 NIH Biosketch available Online

 Curriculum Vitae available Online

### Bio

#### ACADEMIC APPOINTMENTS

- Sr Research Engineer, Chemistry

#### HONORS AND AWARDS

- Farrel Lytle Award, SSRL (2013)
- Applied Biosystems award for outstanding published work, NZSBMB (2003)
- Young Investigators' Award, Health Research Council of New Zealand (1991)
- Young Scientist's Award, Royal Society of New Zealand (1991)

### Publications

#### PUBLICATIONS

- **Restricted Rotational Flexibility of the C5 $\alpha$ -Methyl-Substituted Carbapenem NA-1-157 Leads to Potent Inhibition of the GES-5 Carbapenemase.** *ACS infectious diseases*  
Stewart, N. K., Toth, M., Quan, P., Beer, M., Buynak, J. D., Smith, C. A., Vakulenko, S. B.  
2024; 10 (4): 1232-1249
- **Dirigent isoflavene-forming PsPTS2: 3D Structure, stereochemical and kinetic characterization comparison with pterocarpan-forming PsPTS1 homolog in pea.** *The Journal of biological chemistry*  
Meng, Q., Moinuddin, S. G., Celoy, R. M., Smith, C. A., Young, R. P., Costa, M. A., Freeman, R. A., Fukaya, M., Kim, D. N., Cort, J. R., Hawes, M. C., van Etten, H. D., Pandey, et al  
2024: 105647
- **Structural characterization of a soil viral auxiliary metabolic gene product - a functional chitosanase.** *Nature communications*  
Wu, R., Smith, C. A., Buchko, G. W., Blaby, I. K., Paez-Espino, D., Kyrpides, N. C., Yoshikuni, Y., McDermott, J. E., Hofmockel, K. S., Cort, J. R., Jansson, J. K.  
2022; 13 (1): 5485
- **C6 Hydroxymethyl-Substituted Carbapenem MA-1-206 Inhibits the Major Acinetobacter baumannii Carbapenemase OXA-23 by Impeding Deacylation.** *mBio*  
Stewart, N. K., Toth, M., Alqurafi, M. A., Chai, W., Nguyen, T. Q., Quan, P., Lee, M., Buynak, J. D., Smith, C. A., Vakulenko, S. B.  
2022: e0036722
- **In Crystallo Time-Resolved Interaction of the Clostridioides difficile CDD-1 enzyme with Avibactam Provides New Insights into the Catalytic Mechanism of Class D  $\beta$ -lactamases.** *ACS infectious diseases*  
Stewart, N. K., Toth, M., Stasyuk, A., Vakulenko, S. B., Smith, C. A.  
2021; 7 (6): 1765-1776
- **Class D  $\beta$ -lactamases do exist in Gram-positive bacteria.** *Nature chemical biology*  
Toth, M., Antunes, N. T., Stewart, N. K., Frase, H., Bhattacharya, M., Smith, C. A., Vakulenko, S. B.

2016; 12 (1): 9-14

- **Structural basis for carbapenemase activity of the OXA-23  $\beta$ -lactamase from *Acinetobacter baumannii*.** *Chemistry & biology*  
Smith, C. A., Antunes, N. T., Stewart, N. K., Toth, M., Kumarasiri, M., Chang, M., Mobashery, S., Vakulenko, S. B.  
2013; 20 (9): 1107-15
- **X-ray Structure of the Magnesium(II)-ADP-Vanadate Complex of the *Dictyostelium discoideum* Myosin Motor Domain to 1.9 Å Resolution** *Biochemistry*  
Smith, C. A., Rayment, I.  
1996; 35 (17): 5404–5417
- **Molecular basis and biological relevance of bacterial and plant pinorexinol/laricresinol reductase specificities.** *Protein science : a publication of the Protein Society*  
Smith, C. A., Bedgar, D. L., Costa, M. A., Moinuddin, S. G., Allemann, M. N., Michener, J. K., Davin, L. B., Lewis, N. G.  
2026; 35 (2): e70436
- **Dual mechanism of the OXA-23 carbapenemase inhibition by the carbapenem NA-1-157.** *Antimicrobial agents and chemotherapy*  
Toth, M., Stewart, N. K., Quan, P., Khan, M. M., Cox, J., Buynak, J. D., Smith, C. A., Vakulenko, S. B.  
2025: e0091825
- **Diversity in the Common Fold: Structural Insights into Class D  $\beta$ -Lactamases from Gram-Negative Pathogens.** *Pathogens (Basel, Switzerland)*  
Smith, C. A., Stasyuk, A.  
2025; 14 (8)
- **Evolution of carbapenemase activity in the class C  $\beta$ -lactamase ADC-1.** *mBio*  
Stewart, N. K., Toth, M., Bhattacharya, M., Smith, C. A., Vakulenko, S. B.  
2025: e0018525
- **Standardized Residue Numbering and Secondary Structure Nomenclature in the Class D  $\beta$ -Lactamases.** *ACS infectious diseases*  
Stasyuk, A., Smith, C. A.  
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- **Standardized Residue Numbering and Secondary Structure Nomenclature in the Class D  $\beta$ -Lactamases.** *bioRxiv : the preprint server for biology*  
Stasyuk, A., Smith, C. A.  
2025
- **The cobalamin processing enzyme of *Trichoplax adhaerens*.** *The Journal of biological chemistry*  
Krams, C., Esser, A. J., Klenzendorf, M., Klotz, K., Spiekerkoetter, U., Jacobsen, D. W., Smith, C. A., Maggiolo, A. O., Hannibal, L.  
2024: 108089
- **Decarboxylation of the Catalytic Lysine Residue by the C5 $\alpha$ -Methyl-Substituted Carbapenem NA-1-157 Leads to Potent Inhibition of the OXA-58 Carbapenemase.** *ACS infectious diseases*  
Toth, M., Stewart, N. K., Maggiolo, A. O., Quan, P., Khan, M. M., Buynak, J. D., Smith, C. A., Vakulenko, S. B.  
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- **Novel sterol binding domains in bacteria.** *eLife*  
Zhai, L., Bonds, A. C., Smith, C. A., Oo, H., Chou, J. C., Welander, P. V., Dassama, L. M.  
2024; 12
- **The C5 $\alpha$ -Methyl-Substituted Carbapenem NA-1-157 Exhibits Potent Activity against *Klebsiella* spp. Isolates Producing OXA-48-Type Carbapenemases.** *ACS infectious diseases*  
Smith, C. A., Stewart, N. K., Toth, M., Quan, P., Buynak, J. D., Vakulenko, S. B.  
2023; 9 (5): 1123-1136
- **Dirigent protein subfamily function and structure in terrestrial plant phenol metabolism.** *Methods in enzymology*  
Meng, Q., Kim, S., Costa, M. A., Moinuddin, S. G., Celoy, R. M., Smith, C. A., Cort, J. R., Davin, L. B., Lewis, N. G.  
2023; 683: 101-150
- **The I,d-Transpeptidase LdtAb from *Acinetobacter baumannii* Is Poorly Inhibited by Carbapenems and Has a Unique Structural Architecture.** *ACS infectious diseases*

- Toth, M., Stewart, N. K., Smith, C. A., Lee, M., Vakulenko, S. B.  
2022; 8 (9): 1948-1961
- **Esomeprazole covalently interacts with the cardiovascular enzyme dimethylarginine dimethylaminohydrolase: Insights into the cardiovascular risk of proton pump inhibitors.** *Biochimica et biophysica acta. General subjects*  
Smith, C. A., Ebrahimpour, A., Novikova, L., Farina, D., Bailey, A. O., Russell, W. K., Jain, A., Saltzman, A. B., Malovannaya, A., Prasad, B. V., Hu, L., Ghebre, Y. T.  
2022; 1866 (8): 130149
  - **RapiData at SSRL - Data Collection and Structure Solving: A Practical Course in Macromolecular X-Ray Diffraction Measurement**  
Russi, S., Smith, C.  
INT UNION CRYSTALLOGRAPHY.2022: A262
  - **Dirigent Protein Roadmap to Lignans and Other Vascular Plant Phenol Classes** *The Lignan Handbook*  
Davin, L. B., Cort, J. R., Smith, C. A., Meng, Q., Moinuddin, S. G., Costa, M. A., Bedgar, D. L., Lewis, N. G.  
CRC Press.2022
  - **Crystal structures of glutathione- and inhibitor-bound human GGT1: critical interactions within the cysteinylglycine binding site.** *The Journal of biological chemistry*  
Terzyan, S. S., Nguyen, L. T., Burgett, A. W., Heroux, A., Smith, C. A., You, Y., Hanigan, M. H.  
2021; 296: 100066
  - **Making sense of SFX data: standards for data and structure validation for a non-standard experiment that has come of age.** *IUCrJ*  
Smith, C. A.  
2021; 8 (Pt 4): 482-484
  - **Inhibition of the Clostridioides difficile Class D  $\beta$ -Lactamase CDD-1 by Avibactam.** *ACS infectious diseases*  
Stewart, N. K., Toth, M., Stasyuk, A., Lee, M., Smith, C. A., Vakulenko, S. B.  
2021; 7 (5): 1164-1176
  - **Fragment binding to the Nsp3 macrodomain of SARS-CoV-2 identified through crystallographic screening and computational docking.** *Science advances*  
Schuller, M., Correy, G. J., Gahbauer, S., Fearon, D., Wu, T., Diaz, R. E., Young, I. D., Carvalho Martins, L., Smith, D. H., Schulze-Gahmen, U., Owens, T. W., Deshpande, I., Merz, et al  
2021; 7 (16)
  - **A surface loop modulates activity of the Bacillus class D  $\beta$ -lactamases.** *Journal of structural biology*  
Stewart, N. K., Bhattacharya, M., Toth, M., Smith, C. A., Vakulenko, S. B.  
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  - **Socially-distanced Crystallography in the time of COVID: Remote capabilities at SSRL**  
Wierman, J., Smith, C.  
INT UNION CRYSTALLOGRAPHY.2020: A212
  - **Pterocarpan synthase (PTS) structures suggest a common quinone methide-stabilizing function in dirigent proteins and proteins with dirigent-like domains.** *The Journal of biological chemistry*  
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  - **Lucina pectinata oxyhemoglobin (II-III) heterodimer pH susceptibility.** *Journal of inorganic biochemistry*  
Marchany-Rivera, D., Smith, C. A., Rodriguez-Perez, J. D., López-Garriga, J.  
2020; 207: 111055
  - **Structural basis for the diversity of the mechanism of nucleotide hydrolysis by the aminoglycoside-2"-phosphotransferases.** *Acta crystallographica. Section D, Structural biology*  
Smith, C. A., Toth, M., Stewart, N. K., Maltz, L., Vakulenko, S. B.  
2019; 75 (Pt 12): 1129-1137
  - **The crystal structures of CDD-1, the intrinsic class D  $\beta$ -lactamase from the pathogenic Gram-positive bacterium Clostridioides difficile, and its complex with cefotaxime.** *Journal of structural biology*  
Stewart, N. K., Smith, C. A., Toth, M., Stasyuk, A., Vakulenko, S. B.

2019; 208 (3): 107391

- **Structural Insights into the Mechanism of Carbapenemase Activity of the OXA-48  $\beta$ -Lactamase.** *Antimicrobial agents and chemotherapy*  
Smith, C. A., Stewart, N. K., Toth, M., Vakulenko, S. B.  
2019; 63 (10)
- **Role of the Hydrophobic Bridge in the Carbapenemase Activity of Class D  $\beta$ -Lactamases.** *Antimicrobial agents and chemotherapy*  
Stewart, N. K., Smith, C. A., Antunes, N. T., Toth, M., Vakulenko, S. B.  
2019; 63 (2)
- **Linum Lignan and Associated Biochemical Pathways in Human Health and Plant Defense** *GENETICS AND GENOMICS OF LINUM*  
Moinuddin, S. G. A., Cort, J. R., Smith, C. A., Hano, C., Davin, L. B., Lewis, N. G.  
edited by Cullis, C. A.  
2019; 23: 167-193
- **Intrinsic Class D  $\beta$ -Lactamases of *Clostridium difficile*.** *mBio*  
Toth, M., Stewart, N. K., Smith, C., Vakulenko, S. B.  
2018; 9 (6)
- **Effect of pH on Fe-O<sub>2</sub> bond in the oxygen reactive hemoglobins of *L. pectinata* by X-ray Crystallography**  
Marchany-Rivera, D., Smith, C., Lopez-Garriga, J.  
INT UNION CRYSTALLOGRAPHY.2018: A127
- **Aminoglycoside resistance profile and structural architecture of the aminoglycoside acetyltransferase AAC(6')-Im.** *Microbial cell (Graz, Austria)*  
Smith, C. A., Bhattacharya, M., Toth, M., Stewart, N. K., Vakulenko, S. B.  
2017; 4 (12): 402-410
- **The role of conserved surface hydrophobic residues in the carbapenemase activity of the class D  $\beta$ -lactamases.** *Acta crystallographica. Section D, Structural biology*  
Toth, M., Smith, C. A., Antunes, N. T., Stewart, N. K., Maltz, L., Vakulenko, S. B.  
2017; 73 (Pt 8): 692-701
- **Role of the Conserved Disulfide Bridge in Class A Carbapenemases.** *The Journal of biological chemistry*  
Smith, C. A., Nossioni, Z., Toth, M., Stewart, N. K., Frase, H., Vakulenko, S. B.  
2016; 291 (42): 22196-22206
- **Structural Basis for Enhancement of Carbapenemase Activity in the OXA-51 Family of Class D  $\beta$ -Lactamases.** *ACS chemical biology*  
Smith, C. A., Antunes, N. T., Stewart, N. K., Frase, H., Toth, M., Kantardjieff, K. A., Vakulenko, S.  
2015; 10 (8): 1791-6
- **Human  $\gamma$ -Glutamyl Transpeptidase 1: STRUCTURES OF THE FREE ENZYME, INHIBITOR-BOUND TETRAHEDRAL TRANSITION STATES, AND GLUTAMATE-BOUND ENZYME REVEAL NOVEL MOVEMENT WITHIN THE ACTIVE SITE DURING CATALYSIS.** *The Journal of biological chemistry*  
Terzyan, S. S., Burgett, A. W., Heroux, A., Smith, C. A., Mooers, B. H., Hanigan, M. H.  
2015; 290 (28): 17576-86
- **Kinetic and structural requirements for carbapenemase activity in GES-type  $\beta$ -lactamases.** *Biochemistry*  
Stewart, N. K., Smith, C. A., Frase, H., Black, D. J., Vakulenko, S. B.  
2015; 54 (2): 588-97
- **Trimeric Structure of (+)-Pinorexinol-forming Dirigent Protein at 1.95 angstrom Resolution with Three Isolated Active Sites** *JOURNAL OF BIOLOGICAL CHEMISTRY*  
Kim, K., Smith, C. A., Daily, M. D., Cort, J. R., Davin, L. B., Lewis, N. G.  
2015; 290 (3): 1308-18
- **Goniometer-based femtosecond crystallography with X-ray free electron lasers** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Cohen, A. E., Soltis, S. M., Gonzalez, A., Aguila, L., Alonso-Mori, R., Barnes, C. O., Baxter, E. L., Brehmer, W., Brewster, A. S., Brunger, A. T., Calero, G., Chang, J. F., Chollet, et al  
2014; 111 (48): 17122-17127

- **Structure of the bifunctional aminoglycoside-resistance enzyme AAC(6')-Ie-APH(2'')-Ia revealed by crystallographic and small-angle X-ray scattering analysis.** *Acta crystallographica. Section D, Biological crystallography*  
Smith, C. A., Toth, M., Weiss, T. M., Frase, H., Vakulenko, S. B.  
2014; 70 (Pt 10): 2754-64
- **Structure of the phosphotransferase domain of the bifunctional aminoglycoside-resistance enzyme AAC(6')-Ie-APH(2'')-Ia.** *Acta crystallographica. Section D, Biological crystallography*  
Smith, C. A., Toth, M., Bhattacharya, M., Frase, H., Vakulenko, S. B.  
2014; 70 (Pt 6): 1561-71
- **Structure of the extended-spectrum class C  $\beta$ -lactamase ADC-1 from *Acinetobacter baumannii*.** *Acta crystallographica. Section D, Biological crystallography*  
Bhattacharya, M., Toth, M., Antunes, N. T., Smith, C. A., Vakulenko, S. B.  
2014; 70 (Pt 3): 760-71
- **Crystal structure of carbapenemase OXA-58 from *Acinetobacter baumannii*.** *Antimicrobial agents and chemotherapy*  
Smith, C. A., Antunes, N. T., Toth, M., Vakulenko, S. B.  
2014; 58 (4): 2135-43
- **Bulky "gatekeeper" residue changes the cosubstrate specificity of aminoglycoside 2''-phosphotransferase IIa.** *Antimicrobial agents and chemotherapy*  
Bhattacharya, M., Toth, M., Smith, C. A., Vakulenko, S. B.  
2013; 57 (8): 3763-6
- **Structural and functional characterization of a noncanonical nucleoside triphosphate pyrophosphatase from *Thermotoga maritima*** *ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY*  
Awwad, K., Desai, A., Smith, C., Sommerhalter, M.  
2013; 69: 184-193
- **Structural Basis for Progression toward the Carbapenemase Activity in the GES Family of beta-Lactamases** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*  
Smith, C. A., Frase, H., Toth, M., Kumarasiri, M., Wiafe, K., Munoz, J., Mobashery, S., Vakulenko, S. B.  
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- **Aminoglycoside 2''-phosphotransferase IIIa (APH(2'')-IIIa) prefers GTP over ATP: structural templates for nucleotide recognition in the bacterial aminoglycoside-2'' kinases.** *The Journal of biological chemistry*  
Smith, C. A., Toth, M., Frase, H., Byrnes, L. J., Vakulenko, S. B.  
2012; 287 (16): 12893-903
- **Purification, crystallization and preliminary X-ray analysis of the aminoglycoside-6'-acetyltransferase AAC(6')-Im.** *Acta crystallographica. Section F, Structural biology and crystallization communications*  
Toth, M., Vakulenko, S. B., Smith, C. A.  
2012; 68 (Pt 4): 472-5
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2011; 286 (16): 14396-14409
- **Remote access and automation at SSRL**  
Gonzalez, A., Cohen, A., Deacon, Eriksson, T., McPhillips, S., Soltis, M., Chui, H., Dunten, P., Hollenbeck, M., Mathews, I., Miller, M., McPhillips, T., Moorhead, P., et al  
INT UNION CRYSTALLOGRAPHY.2011: C45-C46
- **Remote access to SSRL crystallography beamlines: Tools for education and training**  
Smith, C.  
INT UNION CRYSTALLOGRAPHY.2011: C209
- **Redetermination of the X-ray structure of nitrooxycobalamin: base-on nitrooxycobalamin exhibits a remarkably long Co-N(dimethylbenzimidazole) bond distance.** *Dalton transactions (Cambridge, England : 2003)*  
Hassanin, H. A., El-Shahat, M. F., DeBeer, S., Smith, C. A., Brasch, N. E.

2010; 39 (44): 10626-30

- **The X-ray crystal structure of glutathionylcobalamin revealed.** *Inorganic chemistry*  
Hannibal, L., Smith, C. A., Jacobsen, D. W.  
2010; 49 (21): 9921-7
- **Crystal structure and kinetic mechanism of aminoglycoside phosphotransferase-2"-IVa** *PROTEIN SCIENCE*  
Toth, M., Frase, H., Antunes, N., Smith, C. A., Vakulenko, S. B.  
2010; 19 (8): 1565-1576
- **Mutant APH(2")-IIa enzymes with increased activity against amikacin and isepamicin.** *Antimicrobial agents and chemotherapy*  
Toth, M., Frase, H., Chow, J. W., Smith, C., Vakulenko, S. B.  
2010; 54 (4): 1590-5
- **An Antibiotic-Resistance Enzyme from a Deep-Sea Bacterium** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*  
Toth, M., Smith, C., Frase, H., Mobashery, S., Vakulenko, S.  
2010; 132 (2): 816-823
- **Remote access to crystallography beamlines at SSRL: novel tools for training, education and collaboration.** *Journal of applied crystallography*  
Smith, C. A., Card, G. L., Cohen, A. E., Doukov, T. I., Eriksson, T. n., Gonzalez, A. M., McPhillips, S. E., Dunten, P. W., Mathews, I. I., Song, J. n., Soltis, S. M.  
2010; 43 (Pt 5): 1261-70
- **Purification, crystallization and preliminary X-ray analysis of Enterococcus casseliflavus aminoglycoside-2"-phosphotransferase-IVa.** *Acta crystallographica. Section F, Structural biology and crystallization communications*  
Toth, M., Vakulenko, S., Smith, C. A.  
2010; 66 (Pt 1): 81-4
- **Synthesis, Synchrotron X-ray Diffraction, and Kinetic Studies on the Formation of a Novel Thiolatocobalamin of Captopril: Evidence for cis-trans Isomerization in the beta-Axial Ligand** *INORGANIC CHEMISTRY*  
Mukherjee, R., McCaddon, A., Smith, C. A., Brasch, N. E.  
2009; 48 (19): 9526-9534
- **High Resolution Crystal Structure of the Methylcobalamin Analogues Ethylcobalamin and Butylcobalamin by X-ray Synchrotron Diffraction** *INORGANIC CHEMISTRY*  
Hannibal, L., Smith, C. A., Smith, J. A., Axhemi, A., Miller, A., Wang, S., Brasch, N. E., Jacobsen, D. W.  
2009; 48 (14): 6615-6622
- **The Crystal Structures of Substrate and Nucleotide Complexes of Enterococcus faecium Aminoglycoside-2 "-Phosphotransferase-IIa [APH(2 ") -IIa] Provide Insights into Substrate Selectivity in the APH(2 ") Subfamily** *JOURNAL OF BACTERIOLOGY*  
Young, P. G., Walanj, R., Lakshmi, V., Byrnes, L. J., Metcalf, P., Baker, E. N., Vakulenko, S. B., Smith, C. A.  
2009; 191 (13): 4133-4143
- **Purification, crystallization and preliminary X-ray analysis of the  $\beta$ -lactamase Oih-1 from *Oceanobacillus iheyensis*** *ACTA CRYSTALLOGRAPHICA SECTION F-STRUCTURAL BIOLOGY COMMUNICATIONS*  
Toth, M., Vakulenko, S. B., Smith, C. A.  
2009; 65: 582-585
- **New paradigm for macromolecular crystallography experiments at SSRL: automated crystal screening and remote data collection** *ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY*  
Soltis, S. M., Cohen, A. E., Deacon, A., Eriksson, T., Gonzalez, A., McPhillips, S., Chui, H., Dunten, P., Hollenbeck, M., Mathews, I., Miller, M., Moorhead, P., Phizackerley, et al  
2008; 64: 1210-1221
- **The Stanford Automated Mounter: Enabling High-Throughput Protein Crystal Screening at SSRL.** *JALA (Charlottesville, Va.)*  
Smith, C. A., Cohen, A. E.  
2008; 13 (6): 335-43
- **Structures of the cIAP2 RING Domain Reveal Conformational Changes Associated with Ubiquitin-conjugating Enzyme (E2) Recruitment** *JOURNAL OF BIOLOGICAL CHEMISTRY*  
Mace, P. D., Linke, K., Feltham, R., Schumacher, F., Smith, C. A., Vaux, D. L., Silke, J., Day, C. L.

2008; 283 (46): 31633-31640

- **Structures of Mycobacterium tuberculosis folypolyglutamate synthase complexed with ADP and AMPPCP** *ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY*  
Young, P. G., Smith, C. A., Metcalf, P., Baker, E. N.  
2008; 64: 745-753
- **Structure of the MDM2/MDMX RING domain heterodimer reveals dimerization is required for their ubiquitylation in trans.** *Cell death and differentiation*  
Linke, K., Mace, P. D., Smith, C. A., Vaux, D. L., Silke, J., Day, C. L.  
2008; 15 (5): 841-8
- **Purification, crystallization and preliminary X-ray analysis of aminoglycoside-2"-phosphotransferase-1c [APH(2")-1c] from <i>Enterococcus gallinarum</i>**  
Byrnes, L. J., Badarau, A., Vakulenko, S. B., Smith, C. A.  
INT UNION CRYSTALLOGRAPHY.2008: 126-129
- **Structure of GES-1 at atomic resolution:: insights into the evolution of carbapenamase activity in the class A extended-spectrum  $\beta$ -lactamases** *ACTA CRYSTALLOGRAPHICA SECTION D-STRUCTURAL BIOLOGY*  
Smith, C. A., Caccamo, M., Kantardjieff, K. A., Vakulenko, S.  
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- **Kinetic mechanism of enterococcal aminoglycoside phosphotransferase 2"-1b** *BIOCHEMISTRY*  
Toth, M., Zajicek, J., Kim, C., Chow, J. W., Smith, C., Mobashery, S., Vakulenko, S.  
2007; 46 (18): 5570-5578
- **Nitroxylcob (III) alamin: Synthesis and X-ray structural characterization** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*  
Hannibal, L., Smith, C. A., Jacobsen, D. W., Brasch, N. E.  
2007; 46 (27): 5140-5143
- **Structure of <i>Escherichia coli</i> UDP-<i>N</i>-acetylmuramoyl:L-alanine ligase (MurC)** *ACTA CRYSTALLOGRAPHICA SECTION D-STRUCTURAL BIOLOGY*  
Deva, T., Baker, E. N., Squire, C. J., Smith, C. A.  
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- **Structure, function and dynamics in the <i>mur</i> family of bacterial cell wall ligases** *JOURNAL OF MOLECULAR BIOLOGY*  
Smith, C. A.  
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- **Anomalous scattering analysis of Agrobacterium radiobacter phosphotriesterase: the prominent role of iron in the heterobinuclear active site** *BIOCHEMICAL JOURNAL*  
Jackson, C. J., Carr, P. D., Kim, H., Liu, J., Herrald, P., Mitic, N., Schenk, G., Smith, C. A., Ollis, D. L.  
2006; 397: 501-508
- **Purification, crystallization and preliminary X-ray analysis of Mycobacterium tuberculosis folypolyglutamate synthase (MtbFPGS)** *ACTA CRYSTALLOGRAPHICA SECTION F-STRUCTURAL BIOLOGY AND CRYSTALLIZATION COMMUNICATIONS*  
Young, P. G., Smith, C. A., Sun, X., Baker, E. N., Metcalf, P.  
2006; 62: 579-582
- **Mutation of Gly51 to serine in the P-loop of Lactobacillus casei folypolyglutamate synthetase abolishes activity by altering the conformation of two adjacent loops** *ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY*  
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## PRESENTATIONS

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