

Stanford



Robert Baldwin

Professor of Biochemistry, Emeritus

 Curriculum Vitae available Online

Bio

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Biochemistry

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I closed my laboratory when I retired in 1998. I continue to do research, chiefly in collaboration with Franc Avbelj, on problems of protein folding energetics, especially peptide backbone solvation, and to write reviews.

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biochemistry (Phd Program)

Publications

PUBLICATIONS

- **How the hydrophobic factor drives protein folding.** *Proceedings of the National Academy of Sciences of the United States of America*
Baldwin, R. L., Rose, G. D.
2016; 113 (44): 12462-12466
- **Dynamic hydration shell restores Kauzmann's 1959 explanation of how the hydrophobic factor drives protein folding** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Baldwin, R. L.
2014; 111 (36): 13052-13056
- **The new view of hydrophobic free energy** *FEBS LETTERS*
Baldwin, R. L.
2013; 587 (8): 1062-1066
- **Molten globules, entropy-driven conformational change and protein folding** *CURRENT OPINION IN STRUCTURAL BIOLOGY*
Baldwin, R. L., Rose, G. D.
2013; 23 (1): 4-10
- **Properties of hydrophobic free energy found by gas-liquid transfer** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Baldwin, R. L.
2013; 110 (5): 1670-1673

- **Gas-liquid transfer data used to analyze hydrophobic hydration and find the nature of the Kauzmann-Tanford hydrophobic factor** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Baldwin, R. L.
2012; 109 (19): 7310-7313
- **Early days of protein hydrogen exchange: 1954-1972** *PROTEINS-STRUCTURE FUNCTION AND BIOINFORMATICS*
Baldwin, R. L.
2011; 79 (7): 2021-2026
- **Populations of the three major backbone conformations in 19 amino acid dipeptides** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Grdadolnik, J., Mohacek-Grosev, V., Baldwin, R. L., Avbelj, F.
2011; 108 (5): 1794-1798
- **Desolvation Penalty for Burying Hydrogen-Bonded Peptide Groups in Protein Folding** *JOURNAL OF PHYSICAL CHEMISTRY B*
Baldwin, R. L.
2010; 114 (49): 16223-16227
- **Helicity of short E-R/K peptides** *PROTEIN SCIENCE*
Sommese, R. F., Sivaramakrishnan, S., Baldwin, R. L., Spudich, J. A.
2010; 19 (10): 2001-2005
- **Dry molten globule intermediates and the mechanism of protein unfolding** *PROTEINS-STRUCTURE FUNCTION AND BIOINFORMATICS*
Baldwin, R. L., Frieden, C., Rose, G. D.
2010; 78 (13): 2725-2737
- **Origin of the change in solvation enthalpy of the peptide group when neighboring peptide groups are added** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Avbelj, F., Baldwin, R. L.
2009; 106 (9): 3137-3141
- **Recollections of Arthur Kornberg (1918-2007) and the beginning of the Stanford biochemistry department - In memoriam** *PROTEIN SCIENCE*
Baldwin, R. L.
2008; 17 (3): 385-388
- **The search for folding intermediates and the mechanism of protein folding** *ANNUAL REVIEW OF BIOPHYSICS*
Baldwin, R. L.
2008; 37: 1-21
- **Energetics of protein folding** *JOURNAL OF MOLECULAR BIOLOGY*
Baldwin, R. L.
2007; 371 (2): 283-301
- **Limited validity of group additivity for the folding energetics of the peptide group** *PROTEINS-STRUCTURE FUNCTION AND BIOINFORMATICS*
Avbelj, F., Baldwin, R. L.
2006; 63 (2): 283-289
- **Intrinsic backbone preferences are fully present in blocked amino acids** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Avbelj, F., Grdadolnik, S. G., Grdadolnik, J., Baldwin, R. L.
2006; 103 (5): 1272-1277
- **Peptide Solvation and H-bonds. Advances in Protein Chemistry, Vol. 72** *Academic Press (Elsevier)*
Baldwin, R., Baker, D, (eds.)
2006: 312 pages
- **Intrinsic backbone preferences are fully present in blocked amino acids.** *Proc. Natl. Acad. Sci. USA*
Avbelj, F., Grdadolnik, SG, Grdadolnik, J, Baldwin, RL
2006; 103: 1272-1277

- **Weak Interactions in Protein Folding: Hydrophobic Free Energy, van der Waals Interactions, Peptide Hydrogen Bonds, and Peptide Solvation. In: Protein Folding Handbook (J. Buchner and T. Kiefhaber, eds.). Wiley-VCH Verlag GmbH & Co. KgaA, Weinheim**
Baldwin, RL
2005: 127-162
- **Early Days of Studying the Mechanism of Protein Folding. In: Protein Folding Handbook. (J. Buchner and T. Kiefhaber, eds.) Wiley-VCH Verlag GmbH & Co. KgaA, Weinheim**
Baldwin, R.
2005: pp. 3-21
- **Protein chemical shifts arising from alpha-helices and beta-sheets depend on solvent exposure** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Avbelj, F., Kocjan, D., Baldwin, R. L.
2004; 101 (50): 17394-17397
- **Origin of the neighboring residue effect on peptide backbone conformation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Avbelj, F., Baldwin, R. L.
2004; 101 (30): 10967-10972
- **Protein chemical shifts arising from alpha-helices and beta-sheets depend on solvent exposure.** *Proc. Natl. Acad. Sci. USA*
Avbelj, F., Kocjan, D, Baldwin, RL
2004; 101: 17394-17397
- **Origin of the neighboring residue effect on peptide backbone conformation** *Proc Natl Acad Sci USA*
Avbelj, F., Baldwin, RL
2004; 101: 10967-10972
- **In search of the energetic role of peptide hydrogen bonds** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Baldwin, R. L.
2003; 278 (20): 17581-17588
- **Role of backbone solvation and electrostatics in generating preferred peptide backbone conformations: Distributions of phi** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Avbelj, F., Baldwin, R. L.
2003; 100 (10): 5742-5747
- **Role of backbone solvation and electrostatics in generating preferred peptide backbone conformations: distributions of phi.** *Proc. Natl. Acad. Sci. USA*
Avbelj, F., Baldwin, RL
2003; 100: 5742-5747
- **Relation between peptide backbone solvation and the energetics of peptide hydrogen bonds.** *Biophysical chemistry*
Baldwin, R. L.
2002; 101-102: 203-210
- **John Schellman and his scientific work.** *Biophysical chemistry*
Baldwin, R. L.
2002; 101-102: 9-13
- **Circular dichroism spectra of short, fixed-nucleus alanine helices** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Chin, D. H., Woody, R. W., Rohl, C. A., Baldwin, R. L.
2002; 99 (24): 15416-15421
- **Polyproline II structure in a sequence of seven alanine residues** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Shi, Z. S., Olson, C. A., Rose, G. D., Baldwin, R. L., Kallenbach, N. R.
2002; 99 (14): 9190-9195
- **Sulfate anion stabilization of native ribonuclease A both by anion binding and by the Hofmeister effect** *PROTEIN SCIENCE*
Ramos, C. H., Baldwin, R. L.

2002; 11 (7): 1771-1778

- **Origin of the different strengths of the (i,i+4) and (i,i+3) leucine pair interactions in helices** *BIOPHYSICAL CHEMISTRY*
Luo, P. Z., Baldwin, R. L.
2002; 96 (2-3): 103-108
- **Making a network of hydrophobic clusters.** *Science*
Baldwin, R. L.
2002; 295 (5560): 1657-1658
- **Role of backbone solvation in determining thermodynamic beta propensities of the amino acids** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Avbelj, F., Baldwin, R. L.
2002; 99 (3): 1309-1313
- **The enthalpy of the alanine peptide helix measured by isothermal titration calorimetry using metal-binding to induce helix formation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Lopez, M. M., Chin, D. H., Baldwin, R. L., Makhatadze, G. I.
2002; 99 (3): 1298-1302
- **A new perspective on unfolded proteins** *UNFOLDED PROTEINS*
Baldwin, R. L.
2002; 62: 361-367
- **Polyproline II structure in a sequence of seven alanine residues.** *Proc Natl Acad Sci USA*
Shi, Z., Olson, CA, Rose, GD, Baldwin, RL, Kallenbach, NR
2002; 99: 9190-9195
- **Limited validity of group additivity for the folding energetics of the peptide group** *Proteins*
Avbelj, F., Baldwin, RL
2002; 99: 9190-9195
- **The enthalpy of the alanine peptide helix measured by isothermal titration calorimetry using metal binding to induce helix formation** *Proc. Natl. Acad. Sci. USA*
Lopez, M., Chin, D-H, Baldwin, RL, Makhatadze, G
2002; 99: 1298-1302
- **Role of backbone solvation in determining thermodynamic propensities of the amino acids.** *Proc. Natl. Acad. Sci. USA*
Avbelj, F., Baldwin, RL
2002; 99: 1309-1313
- **The pK(a) of His-24 in the folding transition state of apomyoglobin** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Jamin, M., Geierstanger, B., Baldwin, R. L.
2001; 98 (11): 6127-6131
- **How Ala -> Gly mutations in different helices affect the stability of the apomyoglobin molten globule** *BIOCHEMISTRY*
Luo, Y. Z., Baldwin, R. L.
2001; 40 (17): 5283-5289
- **Folding consensus?** *NATURE STRUCTURAL BIOLOGY*
Baldwin, R. L.
2001; 8 (2): 92-94
- **Folding Consensus? (News and Views)** *Nat Struct Biol*
Baldwin, R.
2001; 8: 92-93
- **Are denatured proteins ever random coils?** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Baldwin, R. L., Zimm, B. H.
2000; 97 (23): 12391-12392

- **Energetics of the interaction between water and the helical peptide group and its role in determining helix propensities** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Avbelj, F., Luo, P. Z., Baldwin, R. L.
2000; 97 (20): 10786-10791
- **The unfolding enthalpy of the pH 4 molten globule of apomyoglobin measured by isothermal titration calorimetry** *PROTEIN SCIENCE*
Jamin, M., Antalik, M., Loh, S. N., Bolen, D. W., Baldwin, R. L.
2000; 9 (7): 1340-1346
- **The 28-111 disulfide bond constrains the alpha-lactalbumin molten globule and weakens its cooperativity of folding** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Luo, Y. Z., Baldwin, R. L.
1999; 96 (20): 11283-11287
- **Submillisecond unfolding kinetics of apomyoglobin and its pH 4 intermediate** *JOURNAL OF MOLECULAR BIOLOGY*
Jamin, M., Yeh, S. R., Rousseau, D. L., Baldwin, R. L.
1999; 292 (3): 731-740
- **Protein folding from 1961 to 1982** *NATURE STRUCTURAL BIOLOGY*
Baldwin, R. L.
1999; 6 (9): 814-817
- **Putative interhelix ion pairs involved in the stability of myoglobin** *BIOCHEMISTRY*
Ramos, C. H., Kay, M. S., Baldwin, R. L.
1999; 38 (30): 9783-9790
- **Oleg Ptitsyn 1929-1999 - Obituary** *PROTEIN SCIENCE*
Baldwin, R. L.
1999; 8 (7): 1562-1563
- **Interaction between water and polar groups of the helix backbone: An important determinant of helix propensities** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Luo, P. Z., Baldwin, R. L.
1999; 96 (9): 4930-4935
- **Alanine is helix-stabilizing in both template-nucleated and standard peptide helices**
Rohl, C. A., Fiori, W., Baldwin, R. L.
NATL ACAD SCIENCES.1999: 3682-87
- **Specificity of native-like interhelical hydrophobic contacts in the apomyoglobin intermediate** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Kay, M. S., Ramos, C. H., Baldwin, R. L.
1999; 96 (5): 2007-2012
- **A specific transition state for S-peptide combining with folded S-protein and then refolding** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Goldberg, J. M., Baldwin, R. L.
1999; 96 (5): 2019-2024
- **Is protein folding hierarchic? II. Folding intermediates and transition states** *TRENDS IN BIOCHEMICAL SCIENCES*
Baldwin, R. L., Rose, G. D.
1999; 24 (2): 77-83
- **Is protein folding hierarchic? I. Local structure and peptide folding** *TRENDS IN BIOCHEMICAL SCIENCES*
Baldwin, R. L., Rose, G. D.
1999; 24 (1): 26-33
- **A pulse-chase-competition experiment to determine if a folding intermediate is on or off-pathway: Application to ribonuclease A** *JOURNAL OF MOLECULAR BIOLOGY*
Laurents, D. V., BRUIX, M., Jamin, M., Baldwin, R. L.

1998; 283 (3): 669-678

- **Protein folding: Matching theory and experiment** *International Symposium on Protein Condensation - In Honor of Gregorio Weber*
Laurents, D. V., Baldwin, R. L.
CELL PRESS.1998: 428-34
- **Trifluoroethanol stabilizes the pH 4 folding intermediate of sperm whale apomyoglobin** *JOURNAL OF MOLECULAR BIOLOGY*
Luo, Y. Z., Baldwin, R. L.
1998; 279 (1): 49-57
- **Alternative models for describing the acid unfolding of the apomyoglobin folding intermediate** *BIOCHEMISTRY*
Kay, M. S., Baldwin, R. L.
1998; 37 (21): 7859-7868
- **Protonation behavior of histidine 24 and histidine 119 in forming the pH 4 folding intermediate of apomyoglobin** *BIOCHEMISTRY*
Geierstanger, B., Jamin, M., Volkman, B. F., Baldwin, R. L.
1998; 37 (12): 4254-4265
- **Kinetic mechanism of a partial folding reaction. 1. Properties of the reaction and effects of denaturants** *BIOCHEMISTRY*
Goldberg, J. M., Baldwin, R. L.
1998; 37 (8): 2546-2555
- **Kinetic mechanism of a partial folding reaction. 2. Nature of the transition state** *BIOCHEMISTRY*
Goldberg, J. M., Baldwin, R. L.
1998; 37 (8): 2556-2563
- **Two forms of the pH 4 folding intermediate of apomyoglobin** *JOURNAL OF MOLECULAR BIOLOGY*
Jamin, M., Baldwin, R. L.
1998; 276 (2): 491-504
- **Deciphering rules of helix stability in peptides** *ENERGETICS OF BIOLOGICAL MACROMOLECULES, PT B*
Rohl, C. A., Baldwin, R. L.
1998; 295: 1-26
- **Cooperativity of folding of the apomyoglobin pH 4 intermediate studied by glycine and proline mutations** *NATURE STRUCTURAL BIOLOGY*
Luo, Y. Z., Kay, M. S., Baldwin, R. L.
1997; 4 (11): 925-930
- **The problem was to find the problem** *PROTEIN SCIENCE*
Baldwin, R. L.
1997; 6 (9): 2031-2034
- **Comparison of NH exchange and circular dichroism as techniques for measuring the parameters of the helix-coil transition in peptides** *BIOCHEMISTRY*
Rohl, C. A., Baldwin, R. L.
1997; 36 (28): 8435-8442
- **Mechanism of helix induction by trifluoroethanol: A framework for extrapolating the helix-forming properties of peptides from trifluoroethanol/water mixtures back to water** *BIOCHEMISTRY*
Luo, P. Z., Baldwin, R. L.
1997; 36 (27): 8413-8421
- **Ion-pair and charged hydrogen-bond interactions between histidine and aspartate in a peptide helix** *BIOCHEMISTRY*
HUYGHUESDESPOINTES, B. M., Baldwin, R. L.
1997; 36 (8): 1965-1970
- **Characterization of the unfolding pathway of hen egg white lysozyme** *BIOCHEMISTRY*
Laurents, D. V., Baldwin, R. L.
1997; 36 (6): 1496-1504
- **Helix propagation and N-cap propensities of the amino acids measured in alanine-based peptides in 40 volume percent trifluoroethanol** *PROTEIN SCIENCE*

-
- Rohl, C. A., Chakrabartty, A., Baldwin, R. L.
1996; 5 (12): 2623-2637
- **How Hofmeister ion interactions affect protein stability** *BIOPHYSICAL JOURNAL*
Baldwin, R. L.
1996; 71 (4): 2056-2063
 - **Refolding and unfolding kinetics of the equilibrium folding intermediate of apomyoglobin** *NATURE STRUCTURAL BIOLOGY*
Jamin, M., Baldwin, R. L.
1996; 3 (7): 613-618
 - **Packing interactions in the apomyoglobin folding intermediate** *NATURE STRUCTURAL BIOLOGY*
Kay, M. S., Baldwin, R. L.
1996; 3 (5): 439-445
 - **Hydrogen exchange and the unfolding pathway of ribonuclease A** *BIOPHYSICAL CHEMISTRY*
Kiefhaber, T., Baldwin, R. L.
1996; 59 (3): 351-356
 - **Helix propensities of basic amino acids increase with the length of the side-chain** *JOURNAL OF MOLECULAR BIOLOGY*
Padmanabhan, S., York, E. J., Stewart, J. M., Baldwin, R. L.
1996; 257 (3): 726-734
 - **A general two-process model describes the hydrogen exchange behavior of RNase A in unfolding conditions** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Loh, S. N., Rohl, C. A., Kiefhaber, T., Baldwin, R. L.
1996; 93 (5): 1982-1987
 - **On-pathway versus off-pathway folding intermediates** *FOLDING & DESIGN*
Baldwin, R. L.
1996; 1 (1): R1-R8
 - **MEASURING THE STRENGTH OF SIDE-CHAIN HYDROGEN-BONDS IN PEPTIDE HELICES - THE GLN-CENTER-DOT-ASP-(I,I+4) INTERACTION** *BIOCHEMISTRY*
HUYGHUESDESPOINTES, B. M., Klingler, T. M., Baldwin, R. L.
1995; 34 (41): 13267-13271
 - **INTRINSIC STABILITY OF INDIVIDUAL ALPHA-HELICES MODULATES STRUCTURE AND STABILITY OF THE APOMYOGLOBIN MOLTEN GLOBULE FORM** *JOURNAL OF MOLECULAR BIOLOGY*
Kiefhaber, T., Baldwin, R. L.
1995; 252 (1): 122-132
 - **N- AND C-CAPPING PREFERENCES FOR ALL 20 AMINO-ACIDS IN ALPHA-HELICAL PEPTIDES** *PROTEIN SCIENCE*
Doig, A. J., Baldwin, R. L.
1995; 4 (7): 1325-1336
 - **DIRECT NMR EVIDENCE FOR AN INTERMEDIATE PRECEDING THE RATE-LIMITING STEP IN THE UNFOLDING OF RIBONUCLEASE-A** *NATURE*
Kiefhaber, T., Labhardt, A. M., Baldwin, R. L.
1995; 375 (6531): 513-515
 - **STRUCTURE AND STABILITY OF A 2ND MOLTEN GLOBULE INTERMEDIATE IN THE APOMYOGLOBIN FOLDING PATHWAY** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Loh, S. N., Kay, M. S., Baldwin, R. L.
1995; 92 (12): 5446-5450
 - **ALPHA-HELIX FORMATION BY PEPTIDES OF DEFINED SEQUENCE** *Meeting on Recent Advances in Biophysical Chemistry*
Baldwin, R. L.
ELSEVIER SCIENCE BV.1995: 127-35
 - **NATURE OF THE EARLY FOLDING INTERMEDIATE OF RIBONUCLEASE-A** *BIOCHEMISTRY*

- Udgaonkar, J. B., Baldwin, R. L.
1995; 34 (12): 4088-4096
- **KINETICS OF HYDROGEN-BOND BREAKAGE IN THE PROCESS OF UNFOLDING OF RIBONUCLEASE-A MEASURED BY PULSED HYDROGEN-EXCHANGE** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Kiefhaber, T., Baldwin, R. L.
1995; 92 (7): 2657-2661
 - **THE NATURE OF PROTEIN-FOLDING PATHWAYS - THE CLASSICAL VERSUS THE NEW VIEW** *JOURNAL OF BIOMOLECULAR NMR*
Baldwin, R. L.
1995; 5 (2): 103-109
 - **UREA UNFOLDING OF PEPTIDE HELICES AS A MODEL FOR INTERPRETING PROTEIN UNFOLDING** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Scholtz, J. M., Barrick, D., York, E. J., Stewart, J. M., Baldwin, R. L.
1995; 92 (1): 185-189
 - **STABILITY OF ALPHA-HELICES** *ADVANCES IN PROTEIN CHEMISTRY, VOL 46*
Chakrabartty, A., Baldwin, R. L.
1995; 46: 141-176
 - **TESTS FOR HELIX-STABILIZING INTERACTIONS BETWEEN VARIOUS NONPOLAR SIDE-CHAINS IN ALANINE-BASED PEPTIDES** *PROTEIN SCIENCE*
Padmanabhan, S., Baldwin, R. L.
1994; 3 (11): 1992-1997
 - **HELIX-STABILIZING INTERACTION BETWEEN TYROSINE AND LEUCINE OR VALINE WHEN THE SPACING IS 1,4** *JOURNAL OF MOLECULAR BIOLOGY*
Padmanabhan, S., Baldwin, R. L.
1994; 241 (5): 706-713
 - **HELIX-FORMING TENDENCIES OF AMINO-ACIDS IN SHORT (HYDROXYBUTYL)-L-GLUTAMINE PEPTIDES - AN EVALUATION OF THE CONTRADICTORY RESULTS FROM HOST-GUEST STUDIES AND SHORT ALANINE-BASED PEPTIDES** *BIOCHEMISTRY*
Padmanabhan, S., York, E. J., Gera, L., Stewart, J. M., Baldwin, R. L.
1994; 33 (28): 8604-8609
 - **EXCHANGE KINETICS OF INDIVIDUAL AMIDE PROTONS IN N-15-LABELED HELICAL PEPTIDES MEASURED BY ISOTOPE-EDITED NMR** *BIOCHEMISTRY*
Rohl, C. A., Baldwin, R. L.
1994; 33 (25): 7760-7767
 - **HELIX PROPENSITIES OF THE AMINO-ACIDS MEASURED IN ALANINE-BASED PEPTIDES WITHOUT HELIX-STABILIZING SIDE-CHAIN INTERACTIONS** *PROTEIN SCIENCE*
Chakrabartty, A., Kortemme, T., Baldwin, R. L.
1994; 3 (5): 843-852
 - **MOLECULAR MECHANISMS OF ACID DENATURATION - THE ROLE OF HISTIDINE-RESIDUES IN THE PARTIAL UNFOLDING OF APOMYOGLOBIN** *JOURNAL OF MOLECULAR BIOLOGY*
Barrick, D., Hughson, F. M., Baldwin, R. L.
1994; 237 (5): 588-601
 - **DETERMINATION OF FREE-ENERGIES OF N-CAPPING IN ALPHA-HELICES BY MODIFICATION OF THE LIFSON-ROIG HELIX-COIL THEORY TO INCLUDE N-CAPPING AND C-CAPPING** *BIOCHEMISTRY*
Doig, A. J., Chakrabartty, A., Klingler, T. M., Baldwin, R. L.
1994; 33 (11): 3396-3403
 - **FINDING INTERMEDIATES IN PROTEIN-FOLDING** *BIOESSAYS*
Baldwin, R. L.
1994; 16 (3): 207-210
 - **HELIX CAPPING PROPENSITIES IN PEPTIDES PARALLEL THOSE IN PROTEINS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*

- Chakrabartty, A., Doig, A. J., Baldwin, R. L.
1993; 90 (23): 11332-11336
- **CHARGED HISTIDINE AFFECTS ALPHA-HELIX STABILITY AT ALL POSITIONS IN THE HELIX BY INTERACTING WITH THE BACKBONE CHARGES** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Armstrong, K. M., Baldwin, R. L.
1993; 90 (23): 11337-11340
 - **GUANIDINIUM CHLORIDE INDUCTION OF PARTIAL UNFOLDING IN AMIDE PROTON-EXCHANGE IN RNASE-A** *SCIENCE*
Mayo, S. L., Baldwin, R. L.
1993; 262 (5135): 873-876
 - **CHARACTERIZATION OF A RIBONUCLEASE-S REFOLDING INTERMEDIATE** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*
Laurents, D. V., Doig, A. J., Schultz, D. A., Baldwin, R. L.
1993; 345 (1674): 131-140
 - **EFFECT OF A SINGLE ASPARTATE ON HELIX STABILITY AT DIFFERENT POSITIONS IN A NEUTRAL ALANINE-BASED PEPTIDE** *PROTEIN SCIENCE*
HUYGHUESDESPOINTES, B. M., Scholtz, J. M., Baldwin, R. L.
1993; 2 (10): 1604-1611
 - **THE ENERGETICS OF ION-PAIR AND HYDROGEN-BONDING INTERACTIONS IN A HELICAL PEPTIDE** *BIOCHEMISTRY*
Scholtz, J. M., Qian, H., ROBBINS, V. H., Baldwin, R. L.
1993; 32 (37): 9668-9676
 - **AROMATIC SIDE-CHAIN CONTRIBUTION TO FAR-ULTRAVIOLET CIRCULAR-DICHROISM OF HELICAL PEPTIDES AND ITS EFFECT ON MEASUREMENT OF HELIX PROPENSITIES** *BIOCHEMISTRY*
Chakrabartty, A., Kortemme, T., Padmanabhan, S., Baldwin, R. L.
1993; 32 (21): 5560-5565
 - **Stein and Moore Award address. The molten globule intermediate of apomyoglobin and the process of protein folding.** *Protein science*
Barrick, D., Baldwin, R. L.
1993; 2 (6): 869-876
 - **PERCHLORATE-INDUCED DENATURATION OF RIBONUCLEASE-A - INVESTIGATION OF POSSIBLE FOLDING INTERMEDIATES** *BIOCHEMISTRY*
Scholtz, J. M., Baldwin, R. L.
1993; 32 (17): 4604-4608
 - **3-STATE ANALYSIS OF SPERM WHALE APOMYOGLOBIN FOLDING** *BIOCHEMISTRY*
Barrick, D., Baldwin, R. L.
1993; 32 (14): 3790-3796
 - **THE (I, I+4) PHE-HIS INTERACTION STUDIED IN AN ALANINE-BASED ALPHA-HELIX** *JOURNAL OF MOLECULAR BIOLOGY*
Armstrong, K. M., Fairman, R., Baldwin, R. L.
1993; 230 (1): 284-291
 - **HELICAL PEPTIDES WITH 3 PAIRS OF ASP-ARG AND GLU-ARG RESIDUES IN DIFFERENT ORIENTATIONS AND SPACINGS** *PROTEIN SCIENCE*
HUYGHUESDESPOINTES, B. M., Scholtz, J. M., Baldwin, R. L.
1993; 2 (1): 80-85
 - **COMPARISON OF AMINO-ACID HELIX PROPENSITIES (S-VALUES) IN DIFFERENT EXPERIMENTAL SYSTEMS** *ACS SYMPOSIUM SERIES*
Chakrabartty, A., Baldwin, R. L.
1993; 526: 166-177
 - **COMPARISON OF AMINO-ACID HELIX PROPENSITIES (S-VALUES) IN DIFFERENT EXPERIMENTAL SYSTEMS** *SYMP ON PROTEIN FOLDING : IN VIVO AND IN VITRO, AT THE 203RD NATIONAL MEETING OF THE AMERICAN CHEMICAL SOC*
Chakrabartty, A., Baldwin, R. L.
AMER CHEMICAL SOC.1993: 166-177

- **RELATION BETWEEN THE CONVERGENCE TEMPERATURES T(H)ASTERISK AND T(S)ASTERISK IN PROTEIN UNFOLDING** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Baldwin, R. L., Muller, N.
1992; 89 (15): 7110-7113
- **CIS PROLINE MUTANTS OF RIBONUCLEASE-A .1. THERMAL-STABILITY** *PROTEIN SCIENCE*
Schultz, D. A., Baldwin, R. L.
1992; 1 (7): 910-916
- **CIS PROLINE MUTANTS OF RIBONUCLEASE-A .2. ELIMINATION OF THE SLOW-FOLDING FORMS BY MUTATION** *PROTEIN SCIENCE*
Schultz, D. A., Schmid, F. X., Baldwin, R. L.
1992; 1 (7): 917-924
- **KINETICS OF AMIDE PROTON-EXCHANGE IN HELICAL PEPTIDES OF VARYING CHAIN LENGTHS - INTERPRETATION BY THE LIFSON-ROIG EQUATION** *BIOCHEMISTRY*
Rohl, C. A., Scholtz, J. M., York, E. J., Stewart, J. M., Baldwin, R. L.
1992; 31 (5): 1263-1269
- **THE MECHANISM OF ALPHA-HELIX FORMATION BY PEPTIDES** *ANNUAL REVIEW OF BIOPHYSICS AND BIOMOLECULAR STRUCTURE*
Scholtz, J. M., Baldwin, R. L.
1992; 21: 95-118
- **PARAMETERS OF HELIX-COIL TRANSITION THEORY FOR ALANINE-BASED PEPTIDES OF VARYING CHAIN LENGTHS IN WATER** *BIOPOLYMERS*
Scholtz, J. M., Qian, H., York, E. J., Stewart, J. M., Baldwin, R. L.
1991; 31 (13): 1463-1470
- **POSITION EFFECT ON APPARENT HELICAL PROPENSITIES IN THE C-PEPTIDE HELIX** *JOURNAL OF MOLECULAR BIOLOGY*
Fairman, R., Armstrong, K. M., Shoemaker, K. R., York, E. J., Stewart, J. M., Baldwin, R. L.
1991; 221 (4): 1395-1401
- **HYDROGEN-EXCHANGE IN THERMALLY DENATURED RIBONUCLEASE-A** *BIOCHEMISTRY*
Robertson, A. D., Baldwin, R. L.
1991; 30 (41): 9907-9914
- **Characterizing protein folding intermediates.** *Current biology*
Baldwin, R. L., Roder, H.
1991; 1 (4): 218-220
- **LARGE DIFFERENCES IN THE HELIX PROPENSITIES OF ALANINE AND GLYCINE** *NATURE*
Chakrabarty, A., Schellman, J. A., Baldwin, R. L.
1991; 351 (6327): 586-588
- **PROLINE FOR ALANINE SUBSTITUTIONS IN THE C-PEPTIDE HELIX OF RIBONUCLEASE-A** *BIOCHEMISTRY*
STREHLOW, K. G., Robertson, A. D., Baldwin, R. L.
1991; 30 (23): 5810-5814
- **STRAIGHT-CHAIN NONPOLAR AMINO-ACIDS ARE GOOD HELIX-FORMERS IN WATER** *JOURNAL OF MOLECULAR BIOLOGY*
Padmanabhan, S., Baldwin, R. L.
1991; 219 (2): 135-137
- **PROBING THE STABILITY OF A PARTLY FOLDED APOMYOGLOBIN INTERMEDIATE BY SITE-DIRECTED MUTAGENESIS** *BIOCHEMISTRY*
Hughson, F. M., Barrick, D., Baldwin, R. L.
1991; 30 (17): 4113-4118
- **CALORIMETRIC DETERMINATION OF THE ENTHALPY CHANGE FOR THE ALPHA-HELIX TO COIL TRANSITION OF AN ALANINE PEPTIDE IN WATER** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Scholtz, J. M., Marqusee, S., Baldwin, R. L., York, E. J., Stewart, J. M., Santoro, M., Bolen, D. W.
1991; 88 (7): 2854-2858

- **EXPERIMENTAL STUDIES OF PATHWAYS OF PROTEIN FOLDING** *CIBA FOUNDATION SYMPOSIA*
Baldwin, R. L.
1991; 161: 190-205
- **EARLY FOLDING INTERMEDIATE OF RIBONUCLEASE-A** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Udgaonkar, J. B., Baldwin, R. L.
1990; 87 (21): 8197-8201
- **STRUCTURAL CHARACTERIZATION OF A PARTLY FOLDED APOMYOGLOBIN INTERMEDIATE** *SCIENCE*
Hughson, F. M., WRIGHT, P. E., Baldwin, R. L.
1990; 249 (4976): 1544-1548
- **THE GLU-2=ARG-10+ SIDE-CHAIN INTERACTION IN THE C-PEPTIDE HELIX OF RIBONUCLEASE-A** *BIOPHYSICAL CHEMISTRY*
Fairman, R., Shoemaker, K. R., York, E. J., Stewart, J. M., Baldwin, R. L.
1990; 37 (1-3): 107-119
- **RELATIVE HELIX-FORMING TENDENCIES OF NONPOLAR AMINO-ACIDS** *NATURE*
Padmanabhan, S., Marqusee, S., Ridgeway, T., Laue, T. M., Baldwin, R. L.
1990; 344 (6263): 268-270
- **SIDE-CHAIN INTERACTIONS IN THE C-PEPTIDE HELIX - PHE 8 - HIS 12+** *BIOPOLYMERS*
Shoemaker, K. R., Fairman, R., Schultz, D. A., Robertson, A. D., York, E. J., Stewart, J. M., Baldwin, R. L.
1990; 29 (1): 1-11
- **INTERMEDIATES IN THE FOLDING REACTIONS OF SMALL PROTEINS** *ANNUAL REVIEW OF BIOCHEMISTRY*
Kim, P. S., Baldwin, R. L.
1990; 59: 631-660
- **ALPHA-HELIX FORMATION BY SHORT PEPTIDES IN WATER** *SEMINAR AT THE 1989 ANNUAL MEETING OF THE AMERICAN ASSOC FOR THE ADVANCEMENT OF SCIENCE - PROTEIN FOLDING : DECIPHERING THE SECOND HALF OF THE GENETIC CODE*
Marqusee, S., Baldwin, R. L.
AMER ASSOC ADVANCEMENT SCIENCE.1990: 85-?
- **H-1-NMR STUDIES OF THE SOLUTION CONFORMATIONS OF AN ANALOG OF THE C-PEPTIDE OF RIBONUCLEASE-A** *BIOCHEMISTRY*
Osterhout, J. J., Baldwin, R. L., York, E. J., Stewart, J. M., Dyson, H. J., WRIGHT, P. E.
1989; 28 (17): 7059-7064
- **UNUSUALLY STABLE HELIX FORMATION IN SHORT ALANINE-BASED PEPTIDES** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Marqusee, S., ROBBINS, V. H., Baldwin, R. L.
1989; 86 (14): 5286-5290
- **USE OF SITE-DIRECTED MUTAGENESIS TO DESTABILIZE NATIVE APOMYOGLOBIN RELATIVE TO FOLDING INTERMEDIATES** *BIOCHEMISTRY*
Hughson, F. M., Baldwin, R. L.
1989; 28 (10): 4415-4422
- **EFFECT OF THE SUBSTITUTION ALA-]GLY AT EACH OF 5 RESIDUE POSITIONS IN THE C-PEPTIDE HELIX** *BIOCHEMISTRY*
STREHLOW, K. G., Baldwin, R. L.
1989; 28 (5): 2130-2133
- **FURTHER-STUDIES OF THE HELIX DIPOLE MODEL - EFFECTS OF A FREE ALPHA-NH3+ OR ALPHA-COO- GROUP ON HELIX STABILITY** *PROTEINS-STRUCTURE FUNCTION AND GENETICS*
Fairman, R., Shoemaker, K. R., York, E. J., Stewart, J. M., Baldwin, R. L.
1989; 5 (1): 1-7
- **NMR EVIDENCE FOR AN EARLY FRAMEWORK INTERMEDIATE ON THE FOLDING PATHWAY OF RIBONUCLEASE-A** *NATURE*
Udgaonkar, J. B., Baldwin, R. L.
1988; 335 (6192): 694-699

- **HELIX STABILIZATION BY GLU- ... LYS+ SALT BRIDGES IN SHORT PEPTIDES OF DE NOVO DESIGN** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Marqusee, S., Baldwin, R. L.
1987; 84 (24): 8898-8902
- **TESTS OF THE HELIX DIPOLE MODEL FOR STABILIZATION OF ALPHA-HELICES** *NATURE*
Shoemaker, K. R., Kim, P. S., York, E. J., Stewart, J. M., Baldwin, R. L.
1987; 326 (6113): 563-567
- **THE C-PEPTIDE HELIX FROM RIBONUCLEASE-A CONSIDERED AS AN AUTONOMOUS FOLDING UNIT** *COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE BIOLOGY*
Shoemaker, K. R., Fairman, R., Kim, P. S., York, E. J., Stewart, J. M., Baldwin, R. L.
1987; 52: 391-398
- **The design and production of semisynthetic ribonucleases with increased thermostability by incorporation of S-peptide analogues with enhanced helical stability.** *Proteins*
Mitchinson, C., Baldwin, R. L.
1986; 1 (1): 23-33
- **EFFECTS OF DENATURANTS ON AMIDE PROTON-EXCHANGE RATES - A TEST FOR STRUCTURE IN PROTEIN-FRAGMENTS AND FOLDING INTERMEDIATES** *BIOCHEMISTRY*
Loftus, D., Gbenle, G. O., Kim, P. S., Baldwin, R. L.
1986; 25 (6): 1428-1436
- **NATURE OF THE CHARGED-GROUP EFFECT ON THE STABILITY OF THE C-PEPTIDE HELIX** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Shoemaker, K. R., Kim, P. S., Brems, D. N., Marqusee, S., York, E. J., Chaiken, I. M., Stewart, J. M., Baldwin, R. L.
1985; 82 (8): 2349-2353
- **PROTECTION OF AMIDE PROTONS IN FOLDING INTERMEDIATES OF RIBONUCLEASE-A MEASURED BY PH-PULSE EXCHANGE CURVES** *BIOCHEMISTRY*
Brems, D. N., Baldwin, R. L.
1985; 24 (7): 1689-1693
- **A HELIX STOP SIGNAL IN THE ISOLATED S-PEPTIDE OF RIBONUCLEASE-A** *NATURE*
Kim, P. S., Baldwin, R. L.
1984; 307 (5949): 329-334
- **AMIDE PROTON-EXCHANGE USED TO MONITOR THE FORMATION OF A STABLE ALPHA-HELIX BY RESIDUES 3 TO 13 DURING FOLDING OF RIBONUCLEASE-S** *JOURNAL OF MOLECULAR BIOLOGY*
Brems, D. N., Baldwin, R. L.
1984; 180 (4): 1141-1156
- **TESTS OF THE SIMPLE-MODEL OF LIN AND BRANDTS FOR THE FOLDING KINETICS OF RIBONUCLEASE-A** *BIOCHEMISTRY*
Schmid, F. X., Buonocore, M. H., Baldwin, R. L.
1984; 23 (15): 3389-3394
- **STRATEGY FOR TRAPPING INTERMEDIATES IN THE FOLDING OF RIBONUCLEASE AND FOR USING H-1-NMR TO DETERMINE THEIR STRUCTURES** *BIOPOLYMERS*
Ku wajima, K., Kim, P. S., Baldwin, R. L.
1983; 22 (1): 59-67
- **MEASUREMENT OF THE REFOLDING COMBINATION REACTION BETWEEN S-PEPTIDE AND S-PROTEIN** *BIOCHEMISTRY*
Labhardt, A. M., Ridge, J. A., LINDQUIST, R. N., Baldwin, R. L.
1983; 22 (2): 321-327
- **NATURE AND LOCATIONS OF THE MOST SLOWLY EXCHANGING PEPTIDE NH PROTONS IN RESIDUE-1 TO RESIDUE-19 OF RIBONUCLEASE-S** *JOURNAL OF MOLECULAR BIOLOGY*
Ku wajima, K., Baldwin, R. L.
1983; 169 (1): 281-297

- **EXCHANGE BEHAVIOR OF THE H-BONDED AMIDE PROTONS IN THE 3 TO 13 HELIX OF RIBONUCLEASE-S** *JOURNAL OF MOLECULAR BIOLOGY*
Ku wajima, K., Baldwin, R. L.
1983; 169 (1): 299-323
- **SPECIFIC INTERMEDIATES IN THE FOLDING REACTIONS OF SMALL PROTEINS AND THE MECHANISM OF PROTEIN FOLDING** *ANNUAL REVIEW OF BIOCHEMISTRY*
Kim, P. S., Baldwin, R. L.
1982; 51: 459-489
- **LOCAL SECONDARY STRUCTURE IN RIBONUCLEASE-A DENATURED BY GUANIDINE.HCL NEAR 1-DEGREES-C** *JOURNAL OF MOLECULAR BIOLOGY*
Bierzynski, A., Baldwin, R. L.
1982; 162 (1): 173-186
- **INFLUENCE OF CHARGE ON THE RATE OF AMIDE PROTON-EXCHANGE** *BIOCHEMISTRY*
Kim, P. S., Baldwin, R. L.
1982; 21 (1): 1-5
- **A COMPETING SALT-BRIDGE SUPPRESSES HELIX FORMATION BY THE ISOLATED C-PEPTIDE CARBOXYLATE OF RIBONUCLEASE-A** *JOURNAL OF MOLECULAR BIOLOGY*
Kim, P. S., Bierzynski, A., Baldwin, R. L.
1982; 162 (1): 187-199
- **A SALT BRIDGE STABILIZES THE HELIX FORMED BY ISOLATED C-PEPTIDE OF RNASE-A** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-BIOLOGICAL SCIENCES*
Bierzynski, A., Kim, P. S., Baldwin, R. L.
1982; 79 (8): 2470-2474
- **NATURE OF THE FAST AND SLOW REFOLDING REACTIONS OF IRON(III) CYTOCHROME-C** *BIOCHEMISTRY*
Ridge, J. A., Baldwin, R. L., Labhardt, A. M.
1981; 20 (6): 1622-1630
- **STUDIES OF THE INTERMEDIATES IN THE FOLDING OF RIBONUCLEASE-A** *BIOPHYSICAL JOURNAL*
Kim, P. S., Cook, K. H., Baldwin, R. L.
1980; 32 (1): 427-428
- **STRUCTURAL INTERMEDIATES TRAPPED DURING THE FOLDING OF RIBONUCLEASE-A BY AMIDE PROTON-EXCHANGE** *BIOCHEMISTRY*
Kim, P. S., Baldwin, R. L.
1980; 19 (26): 6124-6129
- **REFOLDING BEHAVIOR OF A KINETIC INTERMEDIATE OBSERVED IN THE LOW PH UNFOLDING OF RIBONUCLEASE-A** *BIOCHEMISTRY*
Hagerman, P. J., Schmid, F. X., Baldwin, R. L.
1979; 18 (2): 293-297
- **RECOMBINATION OF S-PEPTIDE WITH S-PROTEIN DURING FOLDING OF RIBONUCLEASE-S .1. FOLDING PATHWAYS OF THE SLOW-FOLDING AND FAST-FOLDING CLASSES OF UNFOLDED S-PROTEIN** *JOURNAL OF MOLECULAR BIOLOGY*
Labhardt, A. M., Baldwin, R. L.
1979; 135 (1): 231-244
- **RECOMBINATION OF S-PEPTIDE WITH S-PROTEIN DURING FOLDING OF RIBONUCLEASE-S .2. KINETIC CHARACTERIZATION OF A STABLE FOLDING INTERMEDIATE SHOWN BY S-PROTEIN AT PH 1.7** *JOURNAL OF MOLECULAR BIOLOGY*
Labhardt, A. M., Baldwin, R. L.
1979; 135 (1): 245-254
- **DETECTION OF AN EARLY INTERMEDIATE IN THE FOLDING OF RIBONUCLEASE-A BY PROTECTION OF AMIDE PROTONS AGAINST EXCHANGE** *JOURNAL OF MOLECULAR BIOLOGY*
Schmid, F. X., Baldwin, R. L.
1979; 135 (1): 199-215

- **ROLE OF PROLINE ISOMERIZATION IN FOLDING OF RIBONUCLEASE-A AT LOW-TEMPERATURES** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Cook, K. H., Schmid, F. X., Baldwin, R. L.
1979; 76 (12): 6157-6161
- **ACID CATALYSIS OF FORMATION OF SLOW-FOLDING SPECIES OF RNASE-A - EVIDENCE THAT REACTION IS PROLINE ISOMERIZATION** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Schmid, F. X., Baldwin, R. L.
1978; 75 (10): 4764-4768
- **QUANTITATIVE TREATMENT OF KINETICS OF FOLDING TRANSITION OF RIBONUCLEASE-A** *BIOCHEMISTRY*
Hagerman, P. J., Baldwin, R. L.
1976; 15 (7): 1462-1473