

Curriculum Vitae

Kenneth C. Ingham, PhD

Education:

B.S. in Chemistry & Mathematics, Eastern Michigan University, 1965

Ph.D. in Physical Chemistry, University of Colorado, 1970

Professional History:

1965-1969 Teaching and Research Assist, Dept of Chemistry, U of Colorado

1970-1972 Postdoctoral Fellow, Depts of Biophys & Biochem, Michigan State U

1972-1975 Sr. Staff Fellow, National Institutes Health (NIAMD)

1975-1980 Res Scientist, Am Red Cross Blood Services, Bethesda, MD

1980-1984 Senior Res Scientist, Am Red Cross Blood Services

1983-1984 Visiting Scientist, Biozentrum, U of Basel, Switzerland

1985-2004 Head, Biochem Dept, Am Red Cross Holland Lab, Rockville, MD

1988-1995 Adj Prof of Biochem and Molec Biol, George Washington U

1995-2004 Prof of Biochem and Molec Biol, George Washington U

2002- President & Chair of Board, Garrett Park Conservation Trust

Honors:

Fogarty International Fellowship, 1983-84,

Research Career Development Award, NHLBI, 1977-82

National Institutes of Health Postdoctoral Fellow 1970-72

Phi Lambda Upsilon (Chemistry Honorary)

Tuition Fellowship, University of Colorado, 1966-67

Professional Societies:

American Society of Biological Chemists

Biophysical Society

American Physical Society

International Society of Thrombosis and Hemostasis

The Protein Society

International Society of Biorecognition Technology

External Appointments and Committees:

Member, Molecular and Cellular Biophysics Study Section, NIH (1981-85)

Ad Hoc, Biomed Science Fellowship Review, NIH (1980;1983)

**Site-Visit, NHLBI Prog Proj Review, Temple University, Thrombosis & Hemostasis,
December 1985**

**Site-Visit, NIGMS Prog Proj Review, Albany Medical Center, Tissue Injury and Repair,
1988**

Faculty Member, Fdn. Adv. Educ. Sciences, NIH (1978-83)
Member, Molecular Sciences Review Panel, NSF, 1989
Exchange Scientist, Inst. of Biochemistry, Ukrainian Academy of Science, Kiev (1989;1991)
Member, Biochemistry of Fibrinolysis Special Study Section, NIH, 1990
Site-Visit, NHLBI Prog Proj Review, U of Wisc Milwaukee, Structure & Function of Clotting Proteins, 1991
Site-Visit, NHLBI Prog Proj Review, U of Rochester, Basic and Clinical Studies of Coagulation Proteins, 1993
Ad Hoc, Molecular and Cellular Biophysics Study Section, NIH, 1994
Ad Hoc, Member, Heme-1 Study Section, NIH (1995)
Site-Visit, NIGMS Prog Proj Review, Albany Medical Center, Wound Healing, 1996
Member Editorial Board, Archives of Biochemistry Biophysics, 1998-present

Internal Committees

Chair, Seminar Committee, ARC Blood Services (1976-1981; 92-93; 97-98)
Chair, Plasma Fractionation Task Force, ARC Blood Services (1977-82)
Chair, Viral Inactivation Task Force, ARC Blood Services (1981-84)
Chair, Radiation Safety Committee, ARC Holland Labs (1988-91)
Member, Vivarium Advisory Committee, ARC Holland Labs (1998-00)

Research Grants

Subunit Interactions in Glycoprotein Hormones, NIAMDD \$116,570 (1977-80)
Precipitation of Proteins with Poly(ethylene glycol), NHLBI \$141,000 (1977-80)
Physical Chemistry of Therapeutic Plasma Proteins, NHLBI \$1,231,000(1981-91)
Shared Instrumentation Grant, NHLBI \$246,000 (1988)
Domain Structure of Modular Plasma Proteins, Mathers Fndn \$580,432 (1990-95)
Molecular Interactions of Fibronectin, NHLBI \$387,550 (1990-95)
Protein and Nucleic Acid Core Facility, NHLBI \$462,749 (1990-95)
Domain Structure and Matrix Interactions of Fibronectin, NHLBI \$681,000 (1992-97)
Domain Structure of Integrin IIbIIIa, Fogarty Internat Cntr \$60,000 (1993-96)
Interactions of Fibronectin Modules, NHLBI, \$665,000 (1997-2002)

Selected Publications

1. Ingham, K.C. and Strickler, S.J. (1970) Hindered Internal Rotation in the Ground and Excited Electronic States of Ortho-Xylene, *J. Chemical Physics* 53,4313- 4318.
3. Ingham, K.C. (1971) The Role of Non-Bonded Forces in Barriers to Internal Rotation in Molecules with Two Equivalent Methyl Groups, *J. Phys. Chem.* 76,551-553.
6. Ingham, K.C. and El-Bayoumi, M.A. (1974) Photo-induced Double Proton Transfer in a

Model DNA Base Pair; Solvent, Temperature, and Deuterium Isotope Effects, *J. Am. Chem. Soc.* 96,1674-1682.

11. Ingham, K.C., Saroff, H. and Edelhoach, H. (1975) Ligand Induced Self-Association of Human Chorionic Gonadotropin: Positive Cooperativity in the Binding of 1,8-Anilino-naphthalene Sulfonate, *Biochemistry* 14, 4751-4758.

13. Ingham, K.C., Weintraub, B.D. and Edelhoach, H. (1976) Kinetics of Recombination of the Subunits of Human Gonadotropin. Effect of Subunit Concentration, *Biochemistry* 15,1720-1726.

19. Miekka, S.I. and Ingham, K.C. (1978) Influence of Self-Association of Proteins on Their Precipitation by Poly(ethylene glycol), *Arch. Biochem. Biophys.* 191, 525-536.

20. Busby, T.F. and Ingham, K.C. (1980) Separation of Macromolecules by Ultrafiltration: Removal of Poly(ethylene glycol) from Human Albumin, *J. Biochem. Biophys. Methods* 2, 191-206.

29. Atha, D. and Ingham, K.C. (1981) Mechanism of Protein Precipitation by Polyethylene Glycol: Analysis in Terms of Excluded Volume, *J. Biol. Chem.* 256, 12108-12117.

32. Forastieri, H. and Ingham, K.C. (1982). Thermal Stability of Human Gonadotropins: Reversible Dissociation of Subunits at Neutral pH, *J. Biol. Chem.* 257, 7976-7981.

36. Forastieri, H. and Ingham, K.C. (1983) Fluid-Phase Interaction between Human Plasma Fibronectin and Gelatin Determined by Fluorescence Polarization, *Arch. Biochem. Biophys.* 227, 358-366.

41. Ingham, K.C., Brew, S.A. Broekelmann, T.J. and McDonald, J.A. (1984) Thermal Stability of Human Plasma Fibronectin and Its Constituent Domains, *J. Bio. Chem.* 259, 11901-11907.

44. Ingham, K.C., Landwehr, R. and Engel, J. (1985) Interaction of Fibronectin with C1q and Collagen: Effects of Ionic Strength and Denaturation of the Collagenous Component. *Eur. J. Biochem.* 148, 219-224.

47. Lennick, M., Brew, S.A. and Ingham, K.C. (1986) "Kinetics of Interaction of C1-Inhibitor with Complement C1, *Biochemistry* 25, 3890-3897.

48. Busby, T.F. and Ingham, K.C. (1987) Calcium Sensitive Thermal Transitions and Domain Structure of Human Complement Subcomponent C1, *Biochemistry* 26, 5564-5571.

54. Busby, T.F. and Ingham, K.C. (1990) The amino terminal calcium-binding domain of human complement C1s mediates the interaction of C1r with C1q, *Biochemistry* 29, 4613-4618.
57. Litvinovich, S., Strickland, D., Medved, L. and Ingham, K. (1991) Domain Structure and interactions of the type I and type II modules in the gelatin-binding region of fibronectin: All six modules are independently folded, *J. Mol. Biol.* 217, 563-575.
58. Novokhatny, V.V., Ingham, K.C. and Medved, L.V. (1991) Domain structure and domain-domain interactions of recombinant tissue plasminogen activator, *J. Biol. Chem.* 266, 12994-13002.
63. Ingham, K.C., Milasincic, D.J., Busby, T.F. and Strickland, D.K. (1992) Dynamic Equilibria between subcomponents of C1, the first component of human complement, *Molecular Immunology* 29, 45-51.
69. Ward, S.L. and Ingham, K.C. (1992) A calcium-binding monoclonal antibody that recognizes a non-calcium-binding epitope in the short consensus repeat units (SCRs) of complement C1r, *Mol. Immunol.* 29, 83-93.
73. Radek, J.T., Jeong, J.-M., Murthy, S.N.P., Ingham, K.C. and Lorand, L. (1993) Affinity of human erythrocyte transglutaminase for a 42-kDa gelatin-binding fragment of human plasma fibronectin, *Proc. Natl. Acad. Sci. USA* 90, 3152-3156.
76. Ingham, K.C., Brew, S.A. and Migliorini, M. (1994) An unusual heparin-binding peptide from the carboxy-terminal hep-2 region of fibronectin, *Arch. Biochem. Biophys.* 314, 242-246.
80. Rivas, G., Ingham, K.C. and Minton, A.P. (1994) Ca²⁺-linked association of human complement C1s and C1r, *Biochemistry* 33, 2341-2348.
85. Litvinovich, S.V. and Ingham, K.C. (1995) Interactions between type III domains in the 110 kDa cell-binding region of fibronectin, *J. Mol. Biol.* 248, 611-626.
88. Busby, T.F., Argraves, W.S., Brew, S.A., Pechik, I. Gilliland, G.L. & Ingham, K.C. (1995) Heparin binding by fibronectin module III-13 involves six discontinuous basic residues brought together to form a cationic cradle, *J.Biol.Chem.* 270,18558-18562.
93. Ingham, K.C., Brew, S.A., Huff, S., & Litvinovich, S.V. (1997) Cryptic self-association sites in type III modules of fibronectin, *J.Biol.Chem.* 272, 1718-1724.

97. Litvinovich, S.V., Brew, S.A., Aota, S., Akiyama, S., Haudenschild, C., and Ingham, K.C. (1998) Formation of amyloid-like fibrils by self-association of a partially unfolded fibronectin type III module, *J. Mol. Biol.* 280, 245-258.
- 99: Bloom, L., Ingham, K.C. and Hynes, R.O. (1999) Fibronectin regulates assembly of actin filaments and focal contacts in cultured cells via the heparin-binding site in repeat III13, *Mol. Biol. Cell* 10, 1521-1536.
100. Yakovlev, S., Makogonenko, E., Kurochkina, N., Nieuwenhuizen, W., Ingham, K. and Medved, L. (2000) Conversion of fibrinogen to fibrin: mechanism of exposure of tPA- and plasminogen-binding sites, *Biochemistry* 26, 15730-15741.
102. Ingham, K.C., Brew, S.A. and Migliorini, M (2002) Type I collagen contains at least 14 cryptic fibronectin binding sites of similar affinity, *Arch. Biochem. Biophys.* 407, 217-223.
103. Katagiri, Y., Brew, S.A. and Ingham, K.C. (2003) All six modules of the gelatin-binding domain of fibronectin are required for full affinity, *J. Biol. Chem.* 278, 11897-11902.
105. Ingham, K.C., Brew, S., Vaz, D., Sauder, D.N., McGavin, M.J. (2004) Interaction of *Staphylococcus aureus* fibronectin-binding protein with fibronectin: affinity, stoichiometry, and modular requirements, *J. Biol. Chem.* 279, 42945-42953.
106. Makogonenko, E., Ingham, K.C., and Medved, L. (2007) Interaction of the fibronectin COOH-terminal Fib-2 regions with fibrin: further characterization and localization of the Fib-2-binding sites, *Biochemistry* 46, 5418-5426.