CURRICULUM VITAE

PART I: General Information

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Education:

1965	B.S., Biochemistry, Michigan State University
1967	M.S., Biochemistry, Michigan State University
1970	Ph.D., Chemistry, Michigan State University

Pre and Postdoctoral Training:

1965-1970	Research Assistant, Departments of Biochemistry and Chemistry, Michigan State University
1967	Dow Summer Fellow, Department of Chemistry, Michigan State University
1967-1968	Du Pont Fellow, Department of Chemistry, Michigan State University
1969-1970	Lubrizol Fellow, Department of Chemistry, Michigan State University
1970-1971	NIH Postdoctoral Fellow, Department of Chemistry, New York University
1975-1977	NIH Postdoctoral Fellow, Department of Chemistry, Columbia University

Academic Appointments:

1973-1975	Research Associate, Dept. of Chemistry, Columbia University
1977-1979	Research Associate, Dept. of Biochemistry, Columbia University
1979-1981	Assistant Professor of Dermatological Biochemistry, Department of Dermatology, Columbia University
1981-1987	Principal Associate in Dermatology, Harvard Medical School
1986-1987	Visiting Professor, Department of Chemistry, University of Connecticut,
1987-1999	Associate Professor, Department of Dermatology, Harvard Medical School
1988-1999	Associate Professor, Division of Health Sciences & Technology, Massachusetts Institute of Technology
1999-present	Professor, Department of Dermatology, Harvard Medical School
2005-present	Affiliated Faculty of the Harvard/MIT Division of Health Sciences Technology

Hospital Appointments:

1981-1986 Associate Biochemist, Massachusetts General Hospital
1986- present Biochemist, Massachusetts General Hospital

Other Professional Positions:

1971-1973 Research Chemist, Union Carbide Corporation, Bound Brook, NJ

Major Committee Assignments:

NIH General Medicine A-1 Study Section, Regular member (1997 - 2001)
NIH Arthritis, Connective Tissue and Skin Study Section, Regular member (2008- present)
NIEHS Laboratory of Molecular Biophysics, Scientific Advisory Board (1991 & 1995)
NIH MBRC Evaluation committees (1994 & 1995)
Stevens Institute of Technology, Biomedical Engineering Scientific Advisory Board (2007-present)
American Academy of Dermatology, Photobiology Task Force
National Research Council, Committee on Photobiology
American Society for Photobiology:
Council (1980-1983)
National Meeting Organizer (1985)
Center for Fast Kinetics Research, University of Texas at Austin, Advisory Board (1986-1991)
Center for Advanced Research in Photobiology, Scientific Advisory Board (1992-1996)
MGH Subcommittee on Research Safety (1983-1987)
MGH Subcommittee on Review of Research Proposals (1986-1992 & 1997-2000)
MGH Committee on Research (1986-1987 & 1990-1993)
Wellman Labs Executive Committee (1999- 2004)
Wellman Center Faculty Executive Committee (2004-present)

Professional Societies:

Offices:
Association Internationale de Photobiologie, Vice President (1988-1992, 1999-2003)
American Society for Photobiology:
Council (1980-1983)
President-Elect, President, Past President (1985-1987)
Inter-American Photochemical Society
Board of Directors (1998-2002)
Membership:
American Chemical Society
American Society for Photobiology
Society for Investigative Dermatology
American Association for the Advancement of Science
European Photochemical Association
Society for Free Radicals in Biology and Medicine

Editorial Boards:

Photochemistry and Photobiology:
Associate Editor, 1983-1993
Editor-in-Chief, 1994-1998
Editorial Advisors Board, 1999-present
Photodermatology, Photoimmunology, Photomedicine:
Associate Editor, 1990-1999

Awards and Honors:

1968	Outstanding Woman Graduate Student, Michigan State University
1995	Fellow, American Association for the Advancement of Science
1997	Photon Award, American Society for Photobiology

Part II: Research, Teaching, and Clinical Contributions

Narrative report:

The long-range goals of my research have been to develop light-based therapies and to understand the responses of skin to solar UV radiation. Both goals depend on identifying photochemical and photo-biological mechanisms in cells and tissue. Contributions from our work include: 1. Established novel drug photoxicity mechanisms and structure-reactivity relationships that allow the photoxicity of new drugs to be anticipated. 2. Demonstrated that dyes being developed for photodynamic therapy can react via non-oxygen dependent pathways thereby extending possible uses of this therapy. Further studies using high-peak-power, pulsed lasers demonstrated that high energy excited states could also be specific sources of oxygen-independent photosensitization. 3. Provided evidence that both the identity of reactive species formed from light-activated dyes and their location in the plasma membrane influence the responses of cells suggesting a method for improving the efficiency of therapeutic photosensitization. 4. Established the mechanism for the low mutagenic potential of 193 nm excimer laser radiation that is used for ablative cornea surgery. 5. Demonstrated that DNA undergoes different photoprocesses when activated by simultaneous absorption of two visible photons from a picosecond pulsed laser than by absorption of a single UV photon thereby challenging the conventional understanding of these processes. 6. Identified mechanisms for oxidative stress after chronic UVR exposure of skin that causes dermal remodeling. 7. Established novel intracellular signaling pathways activated by the reactive oxygen species, singlet oxygen, in skin cells that lead to apoptosis and/or enhance cell survival. 8. Identified biochemical mechanisms responsible for the marked UVA photosensitivity associated with Smith-Lemli-Optiz syndrome. 9. Determined that UVA-induced activation of the Nox1 isoform of NADPH oxidase was the important mechanism for production of oxidative stress in keratinocytes after UVA exposure.

Recently, in collaboration with Dr. Robert Redmond, we developed a light-based technology for forming immediate water-tight seals between tissue surfaces. This treatment has been demonstrated to be superior to standard approaches for closing skin wounds and for reattaching tissue (peripheral nerve, cornea, blood vessels, tendons, vocal fold). Preclinical studies have been published in collaboration with clinicians in ophthalmology, microsurgery, dermatology, otolaryngology, thoracic

surgery and other specialties. A clinical study for closure of skin excisions is ongoing with promising initial results.

My contributions to teaching include organizing and co-teaching a new course on Laser Photomedicine in the Harvard/MIT HST program for three years. I also lectured in the Harvard University Photobiology Course (Biology 289) for four years. I teach dermatology residents the fundamentals of skin photochemistry and photobiology as part of their training program. I co-organized for two years the Collaborative Course on Biology of the Skin, a joint program between the dermatology departments at Harvard, Brown and Boston Universities, and for four years I co-organized the American Academy of Dermatology CME two-day course on Photobiology. I have maintained a strong commitment to minority education by mentoring undergraduate students, a postdoctoral fellow, and two visiting faculty members from minority institutions under programs for enhancement for minority participation in biomedical research.

More than thirty-five research fellows have completed training in my laboratory (three current fellows). Many were chemists who joined my group to learn applications of chemistry to biomedical research and are now conducting research related to biology or medicine. More recently, the fellows have been biologists or dermatologists seeking experience in photobiology research. My lab has welcomed undergraduate, graduate and medical students who are integrated into research projects and mentored in the concepts and practice of biomedical science; many peer-reviewed papers have been co-authored by students.

Report of Current Research Activities:

Project (only major projects listed)	Role
Mechanisms of oxidative stress-induced apoptosis and signal transduction	Principal Investigator
Chronic UVR-induced alterations in dermal matrix proteins: photoaging	Principal Investigator
Photochemical tissue bonding	Principal Investigator

Report of Teaching:

1977-1981	Photobiology Seminar, Columbia University. Organized and lectured in course for dermatology residents and fellows.
1978-1980	Biochemistry, Columbia University. Organized and taught biochemistry seminar for medical students.
1979-1982	Lecturer, Photobiology course, American Academy of Dermatology Meeting. Taught basic photobiology.
1980	Photobiology course (CME), Columbia University. Organized and lectured in six-hour course.
1983	Lecturer, Photobiology Course for Dermatology residents, Massachusetts General Hospital

1983, 1985, 1989, 1991	Lecturer, Harvard University course on Photobiology (Biology 289)
1982-1984	Coordinator, Photobiology Workshops and Lecture Series Massachusetts General Hospital
1985-1988	Wellman tutorials for residents and fellows; series of six sessions each year in photochemistry and photobiology
1988-1990	Course Director, HST 569, Photomedicine; Massachusetts Institute of Technology
1989-1990	Co-Coordinator, Photobiology Workshops and Lecture Series, Massachusetts General Hospital
1992	Course Director, HST 569, Photomedicine; Massachusetts Institute of Technology

Part III: Bibliography

Original Reports

1. Speck JC Jr, Rynbrandt DJ, Kochevar IE. Neighboring group participation in acetal hydrolysis. J Am Chem Soc. 1965; 87:4979-4980.

2. Wagner PJ, Kochevar IE. How efficient is diffusion controlled triplet energy transfer? J Am Chem Soc. 1968; 90:2232-2238.

3. Kochevar IE. A kinetic study of the quenching of triplet butyrophenone by mono-olefins. Ph.D. Dissertation. Michigan State University, 1970.

4. Kochevar IE, Wagner PJ. Triplet ketone-olefin interactions: Energy transfer, charge transfer or radical addition? J Am Chem Soc. 1970; 92:5742-5743.

5. Kochevar IE, Wagner PJ. Quenching of triplet phenyl ketones by olefins. J Am Chem Soc. 1972; 94:3859-3865.

6. Wagner PJ, Kochevar IE, Kempainin AE. Type II photoprocesses of phenyl ketones. Procedure for determining meaningful quantum yields and triplet lifetimes. J Am Chem Soc. 1972; 94:7489-7495.

7. Wamser CC, Medary RT, Kochevar IE, Turro NJ, Chang PL. Steric effects on singlet and triplet energy transfer to azo compounds. J Am Chem Soc. 1975; 97:4864-4869.

8. Kochevar IE, Harber LC. Photoreactions of 3,3',4',5-tetrachloroalicylanilide with proteins. J Invest Dermatol. 1977; 68:151-156.

9. Turro NJ, Kochevar IE, Noguchi Y, Chow MF. Electronic excitation transfer in polymers III. Singlet-singlet, triplet-singlet and triplet-triplet energy transfers. Evidence for triplet migration among pendant phenyl groups in polystyrene. J Am Chem Soc. 1978; 100:3170-3177.

10. Kochevar IE. Photoallergic responses to chemicals. Photochem Photobiol. 1979; 30:437-442.

11. Kochevar IE, Lamola AA. Chlorpromazine and protriptyline phototoxicity: photosensitized, oxygen independent red cell hemolysis. Photochem Photobiol. 1979; 29:791-796.

12. Kochevar IE, Zalar GL, Einbinder J, Harber LC. Assay of contact photosensitivity to musk ambrette in guinea pigs. J Invest Dermatol. 1979; 73:143-146.

13. Sutherland BM, Harber LC, Kochevar IE. Pyrimidine dimer formation and repair in human skin. Cancer Res. 1980; 40:3181-3185.

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15. Giovinazzo VJ, Harber LC, Armstrong RB, Kochevar IE. Photoallergic contact dermatitis to musk ambrette: Clinical report of two patients with persistent light reactor patterns. J Am Acad Dermatol. 1980; 3:384-393.

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17. Lamola AA, Landon D, Kochevar IE, Harber LC. An instrument for action spectrum studies in dermatology. Photochem Photobiol. 1982; 35:285-290.

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20. Kochevar IE, Hom J. Photoproducts of chlorpromazine which cause red blood cell lysis. Photochem Photobiol. 1983; 37:163-168.

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55. Andley UP, Lewis RM, Reddan JR, Kochevar IE. Action spectrum for cytotoxicity in the UVA- and UVB-wavelength region in cultured lens epithelial cells. Invest Ophthal Vis Sci 1994; 35:367-373.

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59. Aveline BM, Kochevar IE, Redmond RW. Photochemistry of N-hydroxypyridine-2-thione derivatives: Involvement of the 2-pyridylthiyl radical in the radical chain reaction mechanism. J Am Chem Soc 1995;117:9699-9708.

60. Aveline BM, Kochevar IE, Redmond RW. N-hydroxypyridine-2(1H)-thione: Not a selective generator of hydroxyl radical in aqueous solution. J Am Chem Soc 1996;118:289-290.

61. Stiel H, Techner K, Paul A, Leupold D, Kochevar IE. Quantitative comparison of excited state properties and intensity-dependent photosensitization by rose bengal. J Photochem Photobiol 1996; 245-254.

62. Lambert C, Stiel H, Techner K, Leupold D, Lynch M, Kochevar IE. Intensity-dependent enzyme photosensitization using ns-pulsed laser radiation. Photochem Photobiol 1996;63:154-160.

63. Kochevar IE, Lambert C, Lynch M, Tedesco AC. Comparison of photosensitized plasma membrane damage caused by singlet oxygen and free radicals. Biochim Biophys Acta 1996; 1280:223-230.

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Reviews, Chapters

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