OMB No. 0925-0001 and 0925-0002 (Rev. 03/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Stoecker, William Van

eRA COMMONS USER NAME (credential, e.g., agency login): STOECKER

POSITION TITLE: President and CEO, Stoecker & Associates

 President and CEO, SpiderTek

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

| INSTITUTION AND LOCATION | DEGREE(if applicable) | Completion DateMM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- |
| California Institute of Technology, Pasadena, CA | B.S. | 06/68 | Mathematics |
| University of California, Los Angeles, CA | M.S. Eng. | 05/71 | Systems Science |
| University of Missouri Columbia, MO | M.D. | 05/77 | Medicine |
| University of Missouri Columbia, MO |  | 05/79 | Internal Medicine |
| University of Missouri Columbia, MO |  | 05/82 | Dermatology |

**A. Personal Statement**

I was inspired by Professor Larry E. Millikan in my dermatology residency to study medical informatics and my department chair, Professor Philip C. Anderson, inspired me to study computer technology in dermatology. Later Dr. Millikan arranged for me to publish a book, *Computer Applications in Dermatology*, Igaku-Shoin / McGraw Hill. Most of the time I have students in the clinic doing medical informatics research. Students often see things in a new way and inspire me to pursue projects in another direction based on their insights. Most of dermatology is image-related. Dr. Oscar Gans, whom many consider the founder of modern German dermatology, said “Dermatology will be based on morphology or it will cease to exist.” Whether we study the morphology of skin lesions directly, or whether we are one step removed from the skin, studying images, or perhaps two steps removed, as we teach the computer to recognize complex skin morphology, we are engaged in the fascinating enterprise of understanding the morphology of skin diseases. I am excited to have a chance to participate with Dr. Stanley in the important project that he proposes: working with students to develop an annotated archive and developing and testing the new fusion technology. I feel privileged to be able to work with Dr. Stanley as he creates new tools to understand skin cancer morphology.

**B. Positions and Honors**

2017 Best Doctors in America

2017 Organizing Committee, VISAPP 2017

2009 Co-author, American Society for Clinical Laboratory Science Research Award for Best Paper, 2009, Chicago, IL

2003-2006 Chair, Task Force on Computers and Internet, American Academy of Dermatology

2001-Present Research Scientist and CEO, SpiderTek, div. Stoecker & Associates, Rolla, MO

1995-1997 President, International Society for Digital Imaging of the Skin

1994-1996 Vice-Chair, Sulzberger Institute for Dermatology Education

1994 Co-author, Best Paper of 192 Papers, ANNIE-94, Artificial Neural Networks in Engineering, St. Louis MO

1992 Guest editor with RH Moss and E Celebi: Special Issue on Digital Imaging in Dermatology, *Computerized Medical Imaging and Graphics*, Vol. 16, No. 3, 1992.

1990-1995 Chair, Task Force on Data Base Development, American Academy of Dermatology

1986-1992 Board of Directors, Missouri Dermatologic Society

1985-1990 Chair, Task Force on DERM/DDX, American Academy of Dermatology:

1984-Present Research Scientist and CEO, Stoecker & Associates, Rolla, MO

1982-Present Dermatologist, The Dermatology Center, Rolla, MO

**Editorial/Advisory Boards and Review Committees**

1987-2009 Computerized Medical Imaging and Graphics

1995-Present Skin Research and Technology

1998-2005 NIH Special Study Section-7

**Students mentored, 2013– 2021**

**MS&T graduate students, co-advised with Professor Stanley, over 30 students, these are since 2017**

Sudhir Sornapudi 3 publications, 3 as first author, one in 2018 cited 54 times

Haidar Almubarak, 3 publications

Norsang Lama, 1 publication

Mishra Nabin, 4 publications, 1 as first author

Anand Nambisan

Bryce Schumacher, 1 publication, 1 as first author

**Southern Illinois University graduate students,** **co-advised with Professor Robert LeAnder**

Ravneet Kaur 4 publications, 2 as first author (image processing)

Pelin Kefel-Guvenc 4 publications, 2 as first author (image processing)

Serkan Kefel 4 publications, 2 as first author (image processing)

**University of Melbourne, co-advised with Professor Mohammad Aldeen**

Sahar Sabbaghi Mahmouei 1 publication, 1 as first author (image processing)

**University of Tennessee-Health Science Center Doctor of Nursing Practice Program**

Michelle Bernard, DNP 1 publication (medical informatics)

**UCLA undergraduate student**

Annie Gao (now neuroscience graduate student)2 publications, both as first author (wound healing).

**MS&T undergraduate students**

**Current:**

Kristin Bosworth 1 publication (medical informatics)

Thanh Phan

Samantha Swinfard

**Since 2013:**

Peter P Albano (now software engineer 1 paper) (image processing)

Justin G. Cole (now family practice resident) 7 papers (some after graduation) (various areas)

Katie S Payne, (now internal medicine resident) 7 papers (multiple areas) 2 as 1st author (various areas)

Ryan K Rader (now medical oncologist) 21 papers (some after graduation), 4 as 1st author (various areas)

Karen D Schilli, (now medical device rep.) 4 papers, two as first author (informatics and loxoscelism)

Bryce Schumacher (now startup investment manager), 1 paper (medical informatics)

Sherea Stricklin (now PM&R specialist) 11 papers (some after graduation), 3 as 1st author (various areas)

Zach T Woolsey (now hospital research coordinator) 3 papers (medical informatics)

**High school students**

Anish Jagannathan (current)

Iqra Choudhury (now medical student) 1 publication (image processing)

**Medical students**

**Current**

Ahmad Rajah U Mo Columbia Medical School (image processing)

**Since 2013**

Aaron Carson, 1 publication (osteoporosis)

**Dermatology resident, University of Nebraska**

Brett C Neill 2 publications, both as first author

**C. Contributions to Science, full list of over 100 publications:**

http://www.ncbi.nlm.nih.gov/pubmed/?term=stoecker+wv and

http://www.ncbi.nlm.nih.gov/pubmed/?term=van+stoecker+w

<https://scholar.google.com/citations?user=x01olm0AAAAJ&hl=en>

**1. Automatic skin cancer screening.** NIH SBIR funding helped us develop conventional image processing techniques to analyze clinical and dermoscopic images. Fusion of different layers of image information combination is needed to improve the low specificity reported with existing automatic skin cancer detection methods. Our research group established quantitative links between clinical findings and the presence of skin cancer. These include the presence of patient concern, the location of in situ melanomas, and fusion of clinical and dermoscopic features of basal cell carcinoma. A series of color analysis papers detailed color and image texture patterns for melanoma detection. Four papers on lesion border detection methods and neural network diagnosis of skin cancer were cited over 300 times (google scholar). Improving the low specificity of melanoma detection requires better identification of benign lesions such as seborrheic keratoses. Our clinical identification of novel structures such as semitranslucency and starry milia-like cysts followed by computer vision techniques to detect these structures has improved our melanoma and basal cell carcinoma automatic detection accuracy. We presented results of fully automatic analysis of dermoscopic images of skin lesions to detect basal cell carcinoma, 98-71% sensitivity-specificity, at the ISDIS-Tri-Societies meeting, 2015, San Francisco.

1. Celebi ME, Kingravi HA, Uddin B, Iyatomi H, Aslandogan YA, **Stoecker WV,** Moss RH. A methodological approach to the classification of dermoscopy images. PMCID: PMC3192405 Computerized Medical Imaging and Graphics. 2007 Sep; 31(6): 362–373. PMCID: PMC3192405.
2. Celebi09 Celebi ME, Iyatomi H, Schaefer G, **Stoecker WV**. Lesion border detection in dermoscopy images. (2009). Computerized Medical Imaging and Graphics. 33(2), 148-53. PMCID: PMC2671195.
3. Lingala M, Stanley RJ, Rader RK, Hagerty J, Rabinovitz HS, Oliviero M, Choudhry I, **Stoecker WV**. Fuzzy logic color detection: Blue areas in melanoma dermoscopy images. (2014). Computerized Medical Imaging and Graphics, 38(5), 403-10. PMCID: PMC428746
4. Stricklin SM, **Stoecker WV**, Malters JM, Drugge R, Oliviero M, Rabinovitz HS, Perry LA. Melanoma in situ in a private practice setting 2005 through 2009: location, lesion size, lack of concern. J Am Acad Dermatol. 2012 Sep;67(3):e105-9. PMCID: PMC341933PMC3419337

**2. Wound healing methods and other devices for better health.** Nonhealing wounds consume 1-2% of medical resources. We have developed a zinc oxide and gauze method for healing wounds that heals chronic wounds faster than previously described methods. A final patent was filed September, 2017.

We own the CuretteBlade license and brought manufacturing to the US from overseas. CuretteBlade is a disposable-head improvement on the dermal curette with a sharper head and lower cost than competitive products. Automation for manufacturing this device involved machining a progressive die to produce a re-designed CuretteBlade, replacing the fragile spot welds by a new clasp system fabricated by the progressive die and introducing automation via a novel multi-blade sharpener.

Our brown recluse spider trap is ready for contract manufacturing. To test our novel spider trap roof, we laser-cut the cardboard spider trap roof prototypes. We developed the procedures for comparing trap designs and showed superiority of our trap to other covered traps on the market for catching brown recluse spiders. We are presenting our design to glue trap manufacturers, with the goal of finding a manufacturer with existing distribution channels. The new trap should open a niche market for a specialized brown recluse spider trap.

1. Parks J, **Stoecker WV**, Paige RL. Trap design for the brown recluse spider, *Loxosceles reclusa*. (2013).

 Journal of Insect Science, 13, 57. doi: 10.1673/031.013.5701 PMCID: PMC3740927

1. Gao AL, Cole JG, Woolsey ZT, **Stoecker WV**. Fast wound healing with zinc oxide dressing using structured wound model. Dermatol Onlin J. 2017 Jan 15;23(1). pii: 13030/qt3hq040t9. PMID:

 28329467.

1. **Stoecker WV**. Wound Dressing (2016). US Provisional Patent Application US62/383,172, Filing Date Sep 2, 2016.
2. Gao AL, Cole JG, Woolsey ZT, **Stoecker WV**. Structured zinc oxide dressing for secondary intention wounds. J Wound Care. 2017 Oct 1;26(Sup10):S30-S36. doi: 10.12968/jowc.2017.26.Sup10.S30. PMID: 28976831

**3. Application of medical informatics methods: pharmaceutical safety and pathology informatics.** I have continued my interest medical informatics as applied to pharmaceutical safety and image processing in pathology, inspired by Dr. Lindberg at the National Library of Medicine and previously in the U MO Pathology Department, and Dr. Larry E. Millikan of the U MO Dermatology Department. With their teaching and my background, I had the opportunity to lead the early development of informational databases in dermatology, available then in floppy disk format and subsequently CD-ROM format, 1985-2005. Our small company, Stoecker & Associates ([www.derminfo.org](http://www.derminfo.org)), with 3 full-time employees and several part-time employees, was the first to bring to market a program to assist in the difficult diagnosis of febrile eruptions: DERM/DDX. Images from the DERM/DDX project provided the early core images for the privately held company Logical Images, Inc., which now has over 40 employees (www.logicalimages.com). We were the first to bring to market a therapy database for dermatologists, DERM/RX, and the first to develop a dermatology drug database, DERM/DRUG, which had a market exceeding $80k for two years. The DERM/DRUG database is still available as an iPhone app: DRUG/DB. We have applied techniques such as proportional reporting ratio and chemical structure analysis to detect signals for cardiotoxicity and other adverse drug events.

1. Sumpter MD, Tatro LS, **Stoecker WV**, Rader RK. Evidence for risk of cardiomyopathy with hydroxychloroquine. (2012). Lupus, 21(14),1594-6.PMID: PMID: 23036986
2. **Rader RK, Stoecker WV, Hinton KA, Malone JC, Schuman TP. CD30+ reversible lymphoid dyscrasia (pseudolymphoma) following HIDA scintigraphy and the [Ring1]-[Ring2]-[C=O] generalized structure hypothesis. J Am Acad Dermatol. 2013 Mar;68(3):e99-101. doi: 10.1016/j.jaad.2012.09.044. PMID:**

**23394929**

1. **Guo P, Banerjee K, Joe Stanley R, Long R, Antani S, Thoma G, Zuna R, Frazier SR, Moss RH, Stoecker WV. Nuclei-Based Features for Uterine Cervical Cancer Histology Image Analysis With Fusion-Based Classification. IEEE J Biomed Health Inform. 2016 Nov;20(6):1595-1607. PMCID: :**

 **PMC5248401**

1. **Sornapudi S, Stanley RJ, Stoecker WV, Almubarak H, et al. Deep learning nuclei detection in digitized histology images by superpixels.** J Pathol Inform. 2018 Mar 5;9:5. PMCID: PMC5869967

**D. Additional Information: Research Support and/or Scholastic Performance**

**Current Research Support**

none

**Pending Research Support**

*1 R41 AR079340-01* Stoecker (PI) 5/21 – 4/22 (Funding unlikely)

NIH-STTR/NIAMS

Suramin for Recluse Spider Bites

STTR Phase I for a promising specific treatment for recluse bites.

*The overall objective of the proposed research is to develop an optimized therapy for brown recluse (Loxosceles reclusa) spider bites.*

**Completed Research Support**

*1 R41 NR018126-01* Stoecker (PI) 8/18-4/20

NIH-SBIR/NINR

Smart Sensor Bandage for Ulcer Monitoring

STTR Phase I for early detection of pressure ulcers.

*The major goal of this project was to develop the a sensor bandage to detect low tissue oxygen before an ulcer occurs.*

*2R 44AR* 055683-01 Stoecker (PI) 6/10-6/14

NIH-SBIR/NIAMS

Assay for Detection of Loxosceles Envenomation *320574*

SBIR Phase II for ELISA for detection of brown recluse spider bites

*The major goal of this project was to develop the first practical test for spider envenomation and assess effectiveness in a pilot trial.*

*1R 43AR* 055683-01 Stoecker (PI) 9/08 – 3/09

NIH-SBIR/NIAMS

Assay for Detection of Loxosceles Envenomation *320574*

SBIR Phase I for ELISA for detection of brown recluse spider bites

*The major goal of this project was to develop the first practical test for spider envenomation*

1R 43CA153927-01 Stoecker (PI) 6/10-12/10

NIH-SBIR/NCI

SBIR Phase I for Automatic Detection of Critical Dermoscopy Features for Basal Cell Carcinoma

*The major goals of this project were to automatically detect dermoscopy features of basal cell carcinoma and to use these to assist nurse practitioners in detection of basal cell carcinoma.*

SBIR 2R 44 CA 101639-01A2 Stoecker (PI) 8/06 – 10/10

NIH/SBIR/NCI

SBIR Phase II for Algorithms for Pigmented Lesions Screening and Detection

*The major goals of this project were to develop a melanoma detection system with endpoints of high melanoma detection rate and high correct biopsy decision rate.*

1R43 CA CA101639 Stoecker (PI) 9/03 – 2/04

NIH/SBIR/NCI

SBIR Phase I for Automatic Identification of Critical Dermoscopy Features

*The major goals of this project were to improve performance of digital dermoscopy systems by finding critical dermoscopy structures and developing a clinical interface for dermoscopy image acquisition.*