CURRICULUM VITAE

Libo Tan, PhD

Assistant Professor

The University of Alabama

Department of Human Nutrition

407 Russell Hall

Tuscaloosa, AL 35487

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# Education

## 2013 Ph.D. in Nutritional Sciences

Department of Nutritional Sciences, **The Pennsylvania State University**, PA

Supervisor: Dr. A. Catharine Ross

Dissertation: Model-based compartmental analysis of the whole-body vitamin A metabolism and kinetics in neonatal rats

## 2007 Bachelor in Biological Sciences

Biochemistry Major, College of Life Science, **Shandong University**, Jinan, China

# Scholarly Training

## 2014-2015 NIH Junior Investigator’s Program, University of Alabama

2012 **Training as Nutrition Evidence Analysis Abstractor**, Center for Nutrition Policy and Promotion, United States Department of Agriculture

2012 **WinSAAM Workshop**, University of Pennsylvania

# Professional Experience

2014- **Assistant Professor**, Department of Human Nutrition & Hospitality Management, College of Human Environmental Sciences, **The University of Alabama**, Tuscaloosa, AL

Areas of research: Bioavailability and pharmacokinetics of carotenoids; Retinoids, carotenoids and chronic diseases; Compartmental modeling of nutrients kinetics; Vitamin A metabolism; Vitamin A supplementation

2013-2014 **Postdoctoral Fellow**, Department of Nutritional Sciences, The Pennsylvania State University, University Park, PA

Research topic: The effects of maternal and neonatal vitamin A supplementation on vitamin A status and vitamin A kinetics in neonatal rats.

# Contracts and Grants

Funded

NIH/NICHD R01 HD066982 3/1/2016-2/29/2020

Title: Vitamin A Supplementation and Retinol Metabolism in the Neonatal Period

Role: Co-PI

USDA Specialty Crop Block Grant Program 8/1/2018-7/31/2019

Title: Postharvest Interventions to Improve Quality and Microbial Safety of Microgreens

Role: PI

UA ORED Internal Funding Small Grant Program 1/1/2019-1/1/2021

Title: Age-Mediated Pharmacokinetics of Lutein in Rats: the APL Study

Role: PI

Mary A. Crenshaw Endowed Research Fund 05/2015-08/2016

Title: Model-Based Compartmental Analysis of the Effects of 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) on Vitamin A Kinetics in Rats

Role: PI

SEC Faculty Travel Program: Visiting Travel Grant 2015-2016

Role: PI

Under Review

USDA-OREI

Title: Integrated Research & Education: Introducing Organic Antimicrobial Alternatives for Safe Production and Consumption of Organic Produce

Role: Co-PD

USDA Specialty Crop Block Grant Program

Title: Establish “International Microgreen Growers Association” to Provide Solid Foundation to Promote Specialty Crops of Microgreens

Role: Co-PI

Unfunded

Tan L (PI), Crowe-White KM (Co-PI), Ellis AC (Co-PI). USDA-NIFA. *Adiposity–mediated Inflammatory Responses to Bioactive Compounds in 100% Watermelon Juice: a Clinical and Pharmacokinetic Investigation.* 2018.

Crowe-White KM (Co-PI), Ellis AC (Co-PI), Tan L (Co-PI). National Watermelon Promotion Board: Nutrition Research Grant. *Pharmacokinetics of Bioactives in Watermelon: the POW Study.* 2018.

Ellis AC (PI), Crowe-White KM (Co-PI), Tan L (Co-PI). USDA-NIFA. *Adiposity–mediated Inflammatory Responses to Bioactive Compounds in 100% Watermelon Juice: a Clinical and Pharmacokinetic Investigation.* 2017.

Crowe-White KM (Co-PI), Ellis AC (Co-PI), Tan L (Co-PI). National Watermelon Promotion Board: Nutrition Research Grant. *Pharmacokinetics of Bioactives in Watermelon and their Acute Influences on Endothelial Risk Factors: the POWER Study*. 2017.

Tan L (PI). University of Alabama: Research Grant Committee. *Does Extra Body Weight Influence the Kinetics and Distribution of Lycopene?* 2016.

# Publications

# (\*denotes student)

\*Senkus KE, **Tan L**, and Crowe-White KM. (2019). Effect of lycopene on systemic and adipose tissue redox balance in Sprague-Dawley rats fed normal and high fat diets. Under Review. ***Free Radical Biology and Medicine.***

\*Gutierrez A, Feng J, **Tan L**, and Kong L**.** (2019). Inhibitory Effect of Tea on the in vitro Enzymatic Digestion of Starch. ***Journal of Science and Health at the University of Alabama***. Accepted.

Wang S, Kong L, Zhao Y, **Tan L**, Zhang J, Du Z, and Zhang H. (2019). Lipophilization and molecular encapsulation of p-coumaric acid by amylose inclusion complex. ***Food Hydrocolloids.*** 93:270-275.

**Tan L** and Kong L**.** (2019). Starch-guest inclusion complexes: formation, structure, and enzymatic digestion. ***Critical Reviews in Food Science and Nutrition.*** doi.org/10.1080/10408398.2018.1550739. [E-pub ahead of print].

\*Senkus KE, **Tan L**, and Crowe-White KM. (2019). Lycopene and metabolic syndrome: a systemic review of the literature. ***Advances in Nutrition.*** 10(1):19-29.

Yuan S, Zhang Y, Liu J, Zhao Y, **Tan L**, Liu, J, Wang Q, and Zhang H. (2019). Structure-affinity relationship of the binding of phenolic acids and their derivatives to bovine serum albumin, and effects on antioxidant activity. ***Food Chemistry.*** 278:77-83.

Wei J, Yin X, Liu Q, **Tan L**, and Jia C. (2018). Association between hypertension and cognitive function: A cross-sectional study in people over 45 years old in China. ***Journal of Clinical Hypertension.*** 20(11):1575-1583.

Hodges JK, **Tan L**, Green MH, and Ross AC. (2017). Vitamin A and retinoic acid combined have a more potent effect compared to vitamin A alone on the uptake of retinol into extrahepatic tissues of neonatal rats raised under vitamin A-marginal conditions. ***Current Developments in Nutrition.*** 1(12).

Hodges JK, **Tan L**, Green MH, and Ross AC. (2017). Vitamin A supplementation redirects the flow of retinyl esters from peripheral to central organs of neonatal rats raised under vitamin A-marginal conditions. ***American Journal of Clinical Nutrition.*** 105(5):1110-1121.

**Tan L**, Babbs AE, Green MH, and Ross AC. (2016) Direct and indirect vitamin A supplementation strategies result in different plasma and tissue retinol kinetics in neonatal rats. ***The Journal of Lipid Research***. 57(8):1423-34.

\*Hodges JK, **Tan L**, Green MH, and Ross AC. (2016). Vitamin A supplementation transiently increases retinol concentrations in extrahepatic organs of neonatal rats raised under vitamin A-marginal conditions. ***The Journal of Nutrition***. 146(10):1953-1960.

\*Hodges JK, **Tan L**, Green MH, and Ross AC. (2016). Vitamin A supplementation increases the uptake of chylomicron retinyl esters into the brain of neonatal rats raised under vitamin A-marginal conditions. ***The Journal of Nutrition***. 146(9):1677-83.

**Tan L**, Green MH, and Ross AC. (2015) Vitamin A kinetics in neonatal rats vs. adult rats: comparison based on model-based compartmental analysis. ***The Journal of Nutrition***. 145(3): 403-410.

**Tan L**, Wray AE, Green MH, and Ross AC. (2014). Compartmental modeling of whole-body vitamin A kinetics in unsupplemented and vitamin A-retinoic acid supplemented neonatal rats. ***The Journal of Lipid Research***. 55(8): 1738-1749.

**Tan L**, Wray AE, Green MH, and Ross AC. (2014). Retinol kinetics in unsupplemented and vitamin A-retinoic acid supplemented neonatal rats: A preliminary model. ***The Journal of Lipid Research***. 55(6):1077-1086.

**Tan L**, Wray AE, and Ross AC. (2012). Oral vitamin A and retinoic acid supplementation stimulate antibody production and splenic Stra6 expression in tetanus toxoid-immunized mice. ***The Journal of Nutrition***. 142(8):1590-5.

In Progress

\*Kwan SH, **Tan L**. (2019). Effects of vitamin A on adipose tissue development: a systematic review of the literature. To be submitted.

\*Guo J, **Tan L**, and Kong L. (2019). Dietary intake of resistant starch on obesity development in adults: a systematic review of the literature. To be submitted.

\*Gutierrez A, Feng J, **Tan L**, and Kong L. (2019). Effect of alkyl chain length of gallates on the inhibition of starch digestion. To be submitted.

\*Zhang Y, Kong L, **Tan L**, and Zhang H. (2019). Lipophilization and amylose inclusion complexation enhanced the photostability and thermal stability of catechin. To be submitted.

# Book Chapters

Ross AC, **Tan L**. (2016). Vitamin A Metabolism in the fetus and neonate, In: **Fetal and Neonatal Physiology**, 5th Edition, Chapter 38, Polin R, Abman S, Benitz W, Rowitch D, eds. Elsevier, Inc. Philadelphia, PA.

Ross AC, **Tan L**. (2015). Vitamin A deficiencies and excess, In: **Nelson’s Textbook of Pediatrics**, 20th Edition, Chapter 45, Kliegman RM, Stanton BF, St. Geme J, Schor N, eds. Elsevier, Inc. Philadelphia, PA.

# Peer-Reviewed Published Abstracts

\*Senkus KE, **Tan L**, and Crowe-White KM. (2018). Relationship between lycopene and metabolic syndrome. ***Journal of the Academy of Nutrition and Dietetics.*** 118(9):A91

Li Y, Green MH, **Tan L,** and Ross AC. (2016). Hepatic uptake of vitamin A is independent of retinoic acid pretreatment in neonatal rats. ***The FASEB Journal***. 31: 635.11.

Urbanek J, **Tan L**, Green MH, and Ross AC. (2016). Vitamin A supplementation only transiently increases retinol concentrations in extrahepatic organs of neonatal rats raised under vitamin A-marginal conditions. ***The FASEB Journal***. 30: 34.5.

Urbanek J, **Tan L**, Ross AC, and Green MH. (2015). The Uptake of Vitamin A into the Neonatal Brain. ***The FASEB Journal***. 29: 32.1.

**Tan L**, Green MH, and Ross AC. (2014). The effects of vitamin A and retinoic acid supplementation to neonatal rats or dietary vitamin A supplementation to lactating mothers on vitamin A metabolism and kinetics in neonatal rats. ***The FASEB Journal***. 28: 645.20.

Urbanek J, **Tan L**, Ross AC, and Green MH. (2014). Vitamin A supplementation promotes the uptake and tissue storage of vitamin A in a kinetic study of neonatal rats. ***The FASEB Journal***. 28: 645.21.

**Tan L**, Green MH, and Ross AC. (2013). Model-based compartmental analysis of vitamin A kinetics in vitamin A-supplemented neonatal rats predicts extensive recycling and altered inter-compartmental exchange rates. ***The FASEB Journal***. 27: 38.7.

**Tan L,** Wray AE, Green MH, and Ross AC. (2012). Development of a whole-body model of vitamin A metabolism in neonatal rats treated with oil or vitamin A and retinoic acid (VARA) based on compartmental analysis of retinol tracer kinetics. ***The FASEB Journal***. 26: 1014.6.

**Tan L** and Ross AC. (2011). The kinetics and regulation of Stra6 expression in spleen and antibody production in tetanus toxoid-immunized mice. ***The FASEB Journal***. 25: 784.4.

# Presentations

## Peer-Reviewed (\*denotes student)

## *National*

\*Senkus KE, **Tan L** and Crowe-White K. (2018). Relation between Lycopene and Metabolic Syndrome. Poster presentation. FNCE 2018, Washington DC.

\*Senkus KE, **Tan L** and Crowe-White K. (2018). Lycopene Attenuates High-Fat Diet-Induced Oxidative Stress in Sprague-Dawley Rats. Poster presentation. Nutrition 2018, Boston, MA.

\*Li Y, Wei CH, Hodges J, Green, M, **Tan L** and Ross AC. (2018). Intestinal Uptake of Vitamin A is Stimulated by Retinoic Acid Pretreatment in Neonatal Rats. Poster presentation. FASEB 4th International Conference on Retinoids, Steamboat Springs, CO.

Hodges J, **Tan L**, MH Green and Ross AC. (2017). Vitamin A Supplementation Redirects the Flow of Retinyl Esters from Peripheral to Central Organs in Neonatal Rats Raised under Vitamin A-Marginal Conditions. Poster presentation. The Experimental Biology 2017, Chicago, IL.

\*Li Y, Green MH, **Tan L**, and Ross AC. (2017). Hepatic Uptake of Vitamin A is Independent of Retinoic Acid Pretreatment in Neonatal Rats. Poster presentation. The Experimental Biology 2017, Chicago, IL.

Ross AC, Green MH and **Tan L**. (2016). Neonatal versus maternal vitamin A supplementation – different effects on neonatal retinol kinetics. Oral presentation. FASEB 3rd International Conference on Retinoids, Palm beach, FL.

\*Urbanek J, **Tan L**, Ross AC, and MH Green. (2016). The transient effect of vitamin A supplementation on tissue levels in a neonatal rat model. Poster presentation. FASEB 3rd International Conference on Retinoids, Palm beach, FL.

\*Urbanek J, **Tan L**, Ross AC, and MH Green. (2016). Vitamin A supplementation transiently increases retinol concentrations in extrahepatic organs of neonatal rats raised under vitamin A-marginal conditions. Oral presentation. The Experimental Biology 2016, San Diego, CA.

\*Li Y, Urbanek J, Green MH, **Tan L**, and Ross AC. (2016). Retinoic acid pretreatment promotes vitamin A accumulation in the lung of neonatal rats. Poster presentation. The Experimental Biology 2016, San Diego, CA.

\*Urbanek J, **Tan L**, Ross AC, and MH Green. (2015). The uptake of vitamin A into the neonatal brain. Oral and poster presentation. The Experimental Biology 2015, Boston, MA.

**Tan L**, Green MH, and Ross AC. (2014). Vitamin A and retinoic acid (VARA) supplementation to neonatal rats or dietary vitamin A supplementation to lactating mothers differentially affect vitamin A status and kinetics in neonatal rats. Poster presentation. FASEB Retinoids Conference 2014, Chicago, IL.

**Tan L**, Green MH, and Ross AC. (2014). The effects of vitamin A and retinoic acid (VARA) supplementation to neonatal rats or dietary vitamin A supplementation to lactating mothers on vitamin A metabolism and kinetics in neonatal rats. Poster presentation. The Experimental Biology 2014, San Diego, CA.

Urbanek J, **Tan L**, Ross AC, and MH Green. (2014). Vitamin A supplementation promotes the uptake and tissue storage of vitamin A in a kinetic study of neonatal rats. Poster presentation. The Experimental Biology 2014, San Diego, CA.

**Tan L**, Green MH, and Ross AC. (2013). Model-based compartmental analysis of vitamin A kinetics in neonatal rats. Oral presentation. The Experimental Biology 2013, Boston, MA.

**Tan L**, Wray AE, Green MH, and Ross AC. (2012). Development of a compartmental model of vitamin A metabolism in neonatal rats treated with oil or vitamin A and retinoic acid (VARA). Poster presentation. FASEB Retinoids Conference 2012, Snowmass, CO.

**Tan L**, Wray AE, Green MH, and Ross AC. (2012). Development of a compartmental model of vitamin A metabolism in neonatal rats treated with oil or vitamin A and retinoic acid (VARA). Poster presentation. The Experimental Biology 2012, San Diego, CA.

**Tan L** and Ross AC. (2011). The kinetics and regulation of Stra6 expression in spleen and antibody production in tetanus toxoid-immunized mice. Poster presentation. The Experimental Biology 2011, Washington DC.

## *International*

**Tan L**, Green MH, and Ross AC. (2013). Tracking the metabolism of vitamin A in neonates using a mathematical modeling approach. Oral presentation. The 11th China Nutrition Science Conference & International DRIs Summit, Hangzhou, China.

Other Presentations (\*denotes student mentored research)

\*Erwin M, \*Kwan SH, \*Senkus KE, Crowe-White K, and **Tan L**. (2019). Maternal Vitamin A Supplementation Modulates Adipose Tissue Development in Offspring of Rats Consuming a High-Fat Diet. Poster presentation. Annual Undergraduate Research and Creative Activity Conference, Tuscaloosa, AL. *(Won Third Place)*

\*Miles S, \*Senkus KE, \*Kwan SH, Crowe-White K, and **Tan L**. (2019). Adipose Tissue Development of Neonatal and Weanling Rats in Response to Maternal High Fat Diet Supplemented with Lycopene. Poster presentation. Annual Undergraduate Research and Creative Activity Conference, Tuscaloosa, AL. *(Won Fifth Place)*

\*Cooper A, \*Zhang Y, Kong L, and **Tan L**. (2019). Nanoencapsulation of Curcumin and β-carotene in Amylose Inclusion Complex. Poster presentation. Annual Undergraduate Research and Creative Activity Conference, Tuscaloosa, AL. *(Won Sixth Place)*

\*Gutierrez A, Feng J, **Tan L**, and Kong L. (2019). Inhibitory Effect of Tea on the in vitro Enzymatic Digestion of Starch. Poster presentation. Annual Undergraduate Research and Creative Activity Conference, Tuscaloosa, AL. *(Won Fourth Place)*

\*Senkus KE, **Tan L**, and Crowe-White K. (2019). Adipose Tissue Development of Neonatal and Weanling Sprague-Dawley Rats in Response to a Maternal High Fat Diet Supplemented with Lycopene. Poster presentation. University Research Symposium 2019, Livingston, AL.

\*Zhang Y, Kong L, and **Tan L**. (2019). Enhanced Storage Stability and Photo-stability of beta-Carotene by Nanoencapsulation using Amylose Inclusion Complex. Poster presentation. University Research Symposium 2019, Livingston, AL.

\*Kwan SH, Feng J, Guadalupe M, Tiong HK, Kong L, and **Tan L**. (2019). Evaluation of Nutritional Quality and Microbial Safety of Microgreens from Commercial and Local Organic Farms. Poster presentation. University Research Symposium 2019, Livingston, AL.

\*Senkus KE, **Tan L**, and Crowe-White K. (2019). Systemic and Adipose Tissue Redox Balance in Sprague-Dawley Rats fed Standard Fat and High Fat Diets Supplemented with Lycopene. Poster presentation. University Research Symposium 2019, Livingston, AL.

\*Gutierrez A, Feng J, **Tan L**, and Kong L. (2019). Inhibitory Effect of Tea on the in vitro Enzymatic Digestion of Starch. Poster presentation. University Research Symposium 2019, Livingston, AL. *(Won Dean’s Award)*

\*Cooper A, Kong L, and **Tan L**. (2018).Effect of Encapsulation by Amylose Inclusion Complex on the Stability of Ascorbyl Palmitate. Oral presentation. University of Alabama Randall Research Scholars Live Broadcast, Tuscaloosa, AL.

\*Kwan SH, **Tan L,** and Kong L. (2018). Recent Developments in Starch-Guest Inclusion Complex. Poster presentation. Annual Undergraduate Research and Creative Activity Conference, Tuscaloosa, AL.

\*Senkus KE, **Tan L**, and Crowe-White K. (2018). Lycopene and Metabolic Syndrome. Educational Studies in Psychology, Research Methodology, and Counseling Graduate Research Symposium, University of Alabama Department of Education, Tuscaloosa, AL.

\*Henry K and **Tan L**. (2018). Literature review on the impacts of obesity on vitamin A status and metabolism. Poster presentation. The Seventeenth Annual University of Alabama System Honors Research Conference, Tuscaloosa, AL.

\*Henry K and **Tan L**. (2017).Literature review on the impacts of obesity on vitamin A status and metabolism. Poster presentation. Annual Undergraduate Research and Creative Activity Conference, Tuscaloosa, AL.

\*Thompson E and **Tan L**. (2015).Vitamin A metabolism in the presence of TCDD. Oral presentation. University of Alabama’s Computer-Based Honor (CBH) Program 2015 Fall Research Presentations, Tuscaloosa, AL.

# Teaching Experience and Course Development

**Instructor**, Department of Human Nutrition & Hospitality Management, University of Alabama

* NHM 690: Doctoral Studies Seminar
* NHM 561: Advanced Vitamins and Minerals
* Teaching Evaluation: 5.00/5.00
* NHM 562: Advance Energy Metabolism
* Teaching Evaluation: 5.00/5.00
* NHM 361: Nutritional Biochemistry (On campus and Online)
* Teaching Evaluation: 4.50/5.00
* NHM 362: Nutrition at Cell Level
* Teaching Evaluation: 4.80/5.00
* NHM 101: Introduction to Human Nutrition
* Teaching Evaluation: 4.89/5.00

**Course development for online delivery**, Department of Human Nutrition & Hospitality Management, University of Alabama

* NHM 361: Nutritional Biochemistry
* NHM 362: Nutrition at Cell Level

**Teaching Assistant**, Department of Nutritional Sciences, Pennsylvania State University

* NUTR 445: Metabolism of Macronutrients

# Research Mentoring

## Shu Hang Kwan – PhD student in Human Nutrition

## Yanqi Zhang – MS student in Health Science

## Sydney Miles – Undergraduate student in Biological Sciences

## Andrew Cooper – Undergraduate student in Mathematics. Advisor for the University of Alabama’s Randall Research Scholars Program.

## Maddie Erwin – Undergraduate student in Biological Sciences

## Delaine Anderson – Undergraduate student in Human Performance Exercise Science

## Holly Nuffer – Undergraduate student in Food and Nutrition

## Katherine Henry – Undergraduate student in Nursing. Advisor for the University of Alabama’s Emerging Scholars Program 2017-2018.

## Elena Thompson – Undergraduate student in Nursing. Advisor for the University of Alabama’s Computer-Based Honor (CBH) Program 2014-2015.

# Professional Activities

## Grant Reviewer

* Reviewer. The Council for the Earth and Life Sciences Netherlands Organisation for Scientific Research (NWO); 2015

## Evidence Analysis Reviewer (Competitive Appointment)

## Nutrition Evidence Abstractor, Nutrition Evidence Library (NEL) of USDA Center for Nutrition Policy and Promotion; 2012 to present.

* Contributed to the publication of Dietary Guideline for Americans 2015

## Journal Reviewer

* Current Developments in Nutrition
* Food Research International
* The Journal of Lipid Research
* The Journal of Nutrition
* The British Journal of Nutrition
* Jornal de Pediatria (A bimonthly publication of Brazilian Society of Pediatrics)
* Molecular Nutrition & Food Science
* The Journal of Nutrition & Food Sciences
* Linus Pauling Institute's Micronutrient Information Center at Oregon State University

## Abstract Reviewer

* Abstract Reviewer. Nutrition 2019 Conference; 2019
* Abstract Reviewer. Nutrition 2018 Conference; 2018

## Leadership

## Chair, Committee of Membership and Communication, North America Chinese Society for Nutrition; 2014 to present.

* **Co-Chair**, Election Committee for Leadership Group, North America Chinese Society for Nutrition; March-June 2016.
* **Co-Chair**, Election Committee for VP Position, North America Chinese Society for Nutrition; February-April 2017.

## Professional Memberships

* American Society for Nutrition (2008 to present)
* International Carotenoid Society (2013 to present)
* Institute of Food Technologies (2018 to present)
* International Society for Computational Biology (2012 to present)
* North America Chinese Society for Nutrition (2013 to present)
* The Obesity Society (2016 to present)

## Internal Committees

* **Co-Chair**, Search Committee for Associate/Full Professor Position, Department of Human Nutrition, University of Alabama (2018-present)
* Graduate Program Admission Committee, Department of Human Nutrition, University of Alabama (2014-present)
* Graduate Studies Committee, College of Human Environmental Sciences, University of Alabama (2014-2015)
* Research Committee, College of Human Environmental Sciences, University of Alabama (2015-2016)

## Judge

## University of West Alabama 7th Undergraduate Research Symposium, 2018.

## Intern

## Center for Disease Control and Prevention (CDC) of Laiwu City, China, 2006.

# Honors and Awards

2015-2016 SECU Visiting Travel Award

2015 Certificate of Appreciation Awarded from USDA

2011-2012 The Woot-Tsuen Wu Leung Scholarships in Nutrition

2004-2006 The University Scholarship Award for Academic Excellence

2005 Guang-Hua Fellowship for Academic Excellence

2004-2007 Dean’s List

**Media Appearance**

UA researchers look to extend shelf life of nutritious vegetables. (2019). <https://www.ua.edu/news/2019/04/ua-researchers-look-to-extend-shelf-life-of-nutritious-vegetables/>

Researchers probe link between newborn health and vitamin A. (2014). ScienceDaily. <https://www.sciencedaily.com/releases/2014/10/141030213807.htm>