Food Chemistry & Packaging Platform Overview

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Chief, Process Engineering Branch
Food and Drug Administration
Division of Processing Science & Technology
Institute for Food Safety & Health
Food Chemistry & Packaging Platform Members

Binu Bedford, M.S. (FDA/Goldbelt)
Tim Duncan, Ph.D. (FDA)
Louis Edano, B.S. (FDA/ORISE)
Lauren Jackson*, Ph.D. (FDA)
John Koontz, Ph.D. (FDA)
Ben Redan, Ph.D. (FDA)
Aman Sandhu*, Ph.D. (IIT)
Yoon Song, Ph.D. (FDA)
Yun Wang, Ph.D. (FDA/ORISE)
Tianxi Yang, Ph.D. (FDA/ORISE)

*Food Chemistry & Packaging Platform Coordinators
New Hires

Louis Edaño, B.S.
FDA/ORISE

Tianxi Yang, Ph.D.
FDA/ORISE

Ben Redan, Ph.D.
FDA/DFPST
Food Chemistry & Packaging
Platform: Students

Pin Chun Chao
Sakshi Gandhi
Anirudh Kaja
Saloni Shah

Josh Warren
Liyun Zhang
Jiajia Zheng

IFSH | INSTITUTE FOR FOOD SAFETY AND HEALTH

FDA | U.S. FOOD & DRUG ADMINISTRATION

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Food Chemistry & Packaging Platform

Objectives: Identify and evaluate approaches for preventing
- Formation of hazardous chemical contaminants during food processing
- Transfer of preformed toxins, allergens and chemical contaminants into food

Impact/relevance:
- Evaluation of preventive controls
- Development of guidance and other policy documents
- Risk assessments
- Development and evaluation of analytical methods
Research Areas

• Migration of packaging constituents and contaminants
• Prevention, removal and mitigation of chemical hazards
• Processing effects on detection and formation of chemical hazards
• Allergen detection, sampling and control
• Development and evaluation of novel analytical methods for chemical hazards

Allergens & Gluten
Heavy/Toxic Metals
Food Adulteration
Process Contaminants
Mycotoxins
Packaging & Nanomaterials
Biosensors
<table>
<thead>
<tr>
<th>2019 Projects</th>
<th>Research Area</th>
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<tr>
<td>Development of a quantum dot-based microfluidic device for the rapid detection of biologically active botulinum neurotoxin in complex media</td>
<td>Methods</td>
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<td>Tim Duncan &amp; Yun Wang</td>
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<td>Factors affecting transfer of copper from food contact materials</td>
<td>Chemical contaminants</td>
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<td>Ben Redan</td>
<td>/indirect additives</td>
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<td>Current assessment of food-grade lubricant contamination into food</td>
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<td>Yoon Song &amp; John Koontz</td>
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<td>Factors affecting the decomposition kinetics of opiate alkaloids in poppy seeds</td>
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<tr>
<td>Predictive migration model parameter determination for EVOH copolymers</td>
<td>Packaging/migration</td>
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<td><strong>John Koontz &amp; Yoon Song</strong></td>
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<td>Determination of the effect of particle size and composition on the release</td>
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<td>of nanoparticles from model polymer nanocomposites</td>
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<td><strong>Tim Duncan &amp; Tianxi Wang</strong></td>
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<td>Systematic approaches for sampling allergens in finished products</td>
<td>Food allergens</td>
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<td><strong>Lauren Jackson &amp; Binu Bedford</strong></td>
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<td>Seafood allergen cross-contact risk due to use of shared fryers</td>
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2019 Accomplishments

**FDA CORES Grant:** Development of a quantum dot-based microfluidic device for the rapid detection of biologically active botulinum neurotoxin in complex media

**Tim Duncan** (CFSAN), Yun Wang (CFSAN), Kyung Sung (CBER), Johnny Lam (CBER), Kazuyo Takeda (CBER), Jiwen Zheng (CDRH), Kristin Schill (CFSAN), Guy E Skinner (CFSAN) - $100,000 - 1 year

**Publications:** 3 peer-reviewed papers; 2 papers in FDA clearance/submitted for publication

**Presentations:** >13 oral and poster presentations at IFT, ACS, IAFP, Gordon Research Conference, FAACT Food Industry & Research Summit, International Fresenius Conference on Food Allergens, Food Allergy Forum