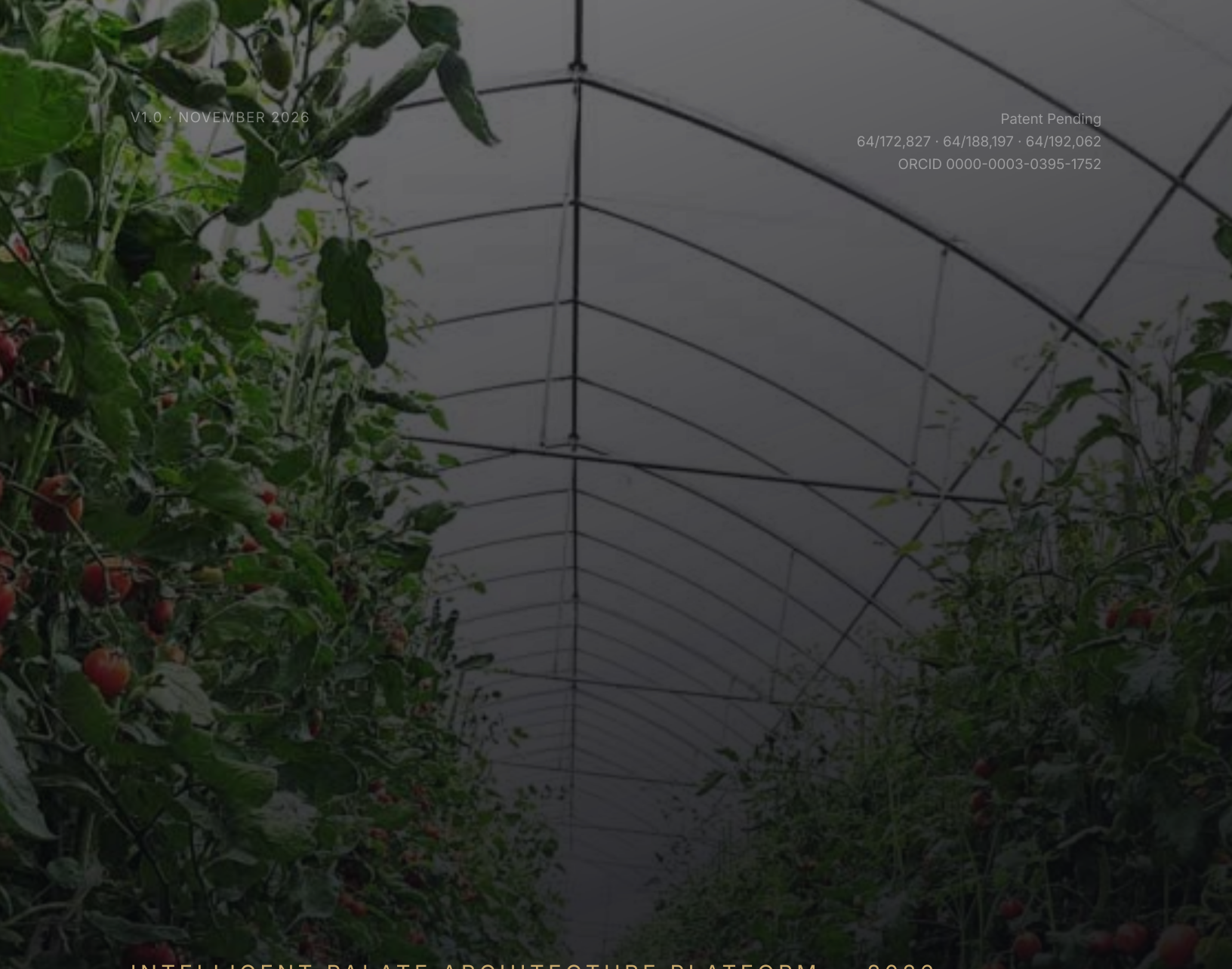


V1.0 · NOVEMBER 2026

Patent Pending
64/172,827 · 64/188,197 · 64/192,062
ORCID 0000-0003-0395-1752

INTELLIGENT PALATE ARCHITECTURE PLATFORM — 2026

Umami Depth Engineering

IFI-U Series: mGluR1 & Glutamate Pathway Constructs

Scoville Splice · IPAP Catalog CAT-04

SCAN TO EXPLORE

Table of Contents

FRONT MATTER

About the Platform 3

IFI Axes Reference 4

Construct Tiers & Pricing 5

CATALOG BODY

Umami Depth Engineering — Introduction 6

Featured Constructs 7

Full Product Listing 8–9

ORDER & CROSS-SELL

Order Now 10

Related Catalogs 11

BACK MATTER

Pricing & Variants Guide 12

How to Order Samples 13

IFI Quick Reference 14

Research Papers & Citations 15

THIS CATALOG

- **25 validated constructs in this series**
- Five construct access tiers: Foundational through Summit
- Primary axis: IFI-U (Umami)

WHO DOWNLOADS THIS

Savory food developers · Broth & sauce manufacturers · Meat analog formulators

START FREE TODAY

Tier I constructs available. Academic accounts free for initial screening.

platform.scovillesplice.farm

STARTER KIT

New to IPAP? Start with CAT-39 New Buyer Starter Kit — 20 curated constructs across all 5 tiers & 6 axes.

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

About the Platform

INTELLIGENT PALATE ARCHITECTURE PLATFORM

Engineering the complete sensory profile of plants.

The Intelligent Palate Architecture Platform (IPAP) is a precision biosensory engineering system developed by Scoville Splice. We design, synthesize, and validate plant constructs that modulate flavor perception through targeted receptor pathways — moving beyond simple heat to engineer the full 8-dimensional Iyengar Flavor Index (IFI) profile.

Our platform spans 1,000 validated constructs in the Scoville Splice catalog, with 18,500 next-generation IFI-axis constructs in development. Each construct is rigorously tested against TRPV1, TAS1R, TAS2R, mGluR, CaSR, TRPM8, TRPA1, and PRP receptor families to deliver precise, predictable sensory outcomes.



PLATFORM STATS

1,000+

Validated constructs across 50+ organism families

RESEARCH FOUNDATION

21 peer-reviewed publications on Zenodo. Patent filings: 64/172,827, 64/188,197, and 64/192,062. ORCID: 0000-0003-0395-1752.

BIOSAFETY

IBC-certified BSL-1 constructs. CRISPR designer with built-in OFAC compliance and agent gate. All constructs ship with full CoA.

ACCESS

platform.scovillesplice.farm
Academic and commercial licensing tiers available. Enterprise custom pricing on request.

IFI Axes Reference

IYENGAR FLAVOR INDEX — 8-DIMENSIONAL SENSORY MAP

Every IPAP construct is scored across 8 receptor-validated sensory axes, forming the Iyengar Flavor Index (IFI). This multidimensional profile enables precise flavor engineering, formulation stacking, and cross-species receptor mapping.

IFI-H
Heat / Pungency
Receptor: TRPV1

IFI-S
Sweetness
Receptor: TAS1R2-R3

IFI-U
Umami
Receptor: mGluR1

IFI-B
Bitter
Receptor: TAS2R38

IFI-K
Kokumi
Receptor: CaSR

IFI-C
Cool-Burn
Receptor: TRPM8

IFI-P
Sharp / Pungency
Receptor: TRPA1

IFI-A
Astringency
Receptor: PRPs

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

Construct Tiers & Pricing

FIVE-TIER ACCESS ARCHITECTURE

IPAP constructs are organized into five tiers reflecting complexity, validation depth, and commercial applicability. All prices are per-construct licensing fees for research use. Volume and institutional discounts available.

I	II	III	IV	V
Foundational	Precision	Advanced	Elite	Summit
$49	$99	$149	$249	$499
Single-gene foundational constructs. Academic access. Ideal for initial screening.	Multi-gene precision assemblies. Research-grade. Validated in model organisms.	Advanced stacked constructs. Commercial R&D ready. Full IFI scorecard included.	Elite combinatorial designs. Industry formulation ready. Priority synthesis.	Summit-tier bespoke constructs. Custom receptor profiling. Dedicated support.

IP LICENSING TIERS

T1 — Academic: Single-lab non-commercial use. Publication rights included. Sublicensing prohibited.

T2 — Startup: Up to $5M ARR. Product development rights. Field-of-use restrictions apply.

T3 — Commercial: Unlimited revenue. Full field-of-use. 3% royalty on net sales.

T4 — Exclusive: Exclusive territory rights. Custom terms. enterprise@scovillesplice.farm

ACADEMIC PRICING

Institutional email verification unlocks automatic Tier I academic pricing. ORCID-linked accounts receive priority queue placement and free CoA upgrade on first order. Learn more →

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026



CAT-04 · IFI-U

Umami Depth Engineering

Deep savory enhancement through metabotropic glutamate receptor pathway engineering. The IFI-U series enhances free glutamate production, L-glutamate transporter expression, and mGluR1 ligand affinity for superior umami intensity.

25
constructs in this series

8
IFI axes measured

WHO BUYS THIS

Savory food developers · Broth & sauce manufacturers · Meat analog formulators

STACK WITH

IFI-K
Combine for a full savory depth U×K profile. See CAT-33.

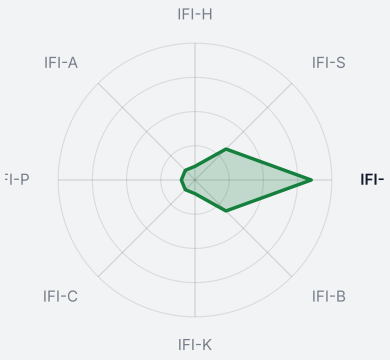
Featured Constructs







HIGHLIGHTED SELECTIONS FROM THE UMAMI DEPTH ENGINEERING SERIES



IFI Profile: IFI-U

I — Foundational
SS-0210
Beefsteak Burn
S. lycopersicum
14,965 SHU
6 genes
IFI-U
Stack: full savory depth U×K profile

I — Foundational
SS-0219
Pompeii
S. lycopersicum
299,292 SHU
11 genes
IFI-U
Stack: full savory depth U×K profile

I — Foundational
SS-0223
Pinatubo
S. lycopersicum
861,228 SHU
13 genes
IFI-U
Stack: full savory depth U×K profile

I — Foundational
SS-0221
Etna
S. lycopersicum
586,368 SHU
12 genes
IFI-U
Stack: full savory depth U×K profile

I — Foundational
SS-0212
Vine Ignition
S. lycopersicum
29,929 SHU
7 genes
IFI-U
Stack: full savory depth U×K profile

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

Full Product Listing

UMAMI DEPTH ENGINEERING — CONSTRUCTS 1–16 OF 25

I
SS-0201
Ember Fruit
S. lycopersicum
150 SHU
IFI-U

I
SS-0202
Warm Vine
S. lycopersicum
300 SHU
IFI-U

I
SS-0203
Slow Roast
S. lycopersicum
748 SHU
IFI-U

I
SS-0204
Campfire Tomato
S. lycopersicum
1,497 SHU
IFI-U

I
SS-0205
Sundried Spark
S. lycopersicum
2,394 SHU
IFI-U

I
SS-0206
Cherry Bomb
S. lycopersicum
2,993 SHU
IFI-U

I
SS-0207
Roma Blaze
S. lycopersicum
4,489 SHU
IFI-U

I
SS-0208
Heirloom Scald
S. lycopersicum
7,483 SHU
IFI-U

I
SS-0209
Plum Flare
S. lycopersicum
10,475 SHU
IFI-U

I
SS-0210
Beefsteak Burn
S. lycopersicum
14,965 SHU
IFI-U

I
SS-0211
Cluster Fire
S. lycopersicum
22,447 SHU
IFI-U

I
SS-0212
Vine Ignition
S. lycopersicum
29,929 SHU
IFI-U

I
SS-0213
Sauce Base Hot
S. lycopersicum
44,894 SHU
IFI-U

I
SS-0214
Paste Inferno
S. lycopersicum
59,858 SHU
IFI-U

I
SS-0215
Sun Gold Sting
S. lycopersicum
74,823 SHU
IFI-U

I
SS-0216
Grape Shot
S. lycopersicum
104,752 SHU
IFI-U

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

Full Product Listing

UMAMI DEPTH ENGINEERING — CONSTRUCTS 17–32 OF 25

I
SS-0217
Krakatoa
S. lycopersicum
149,646 SHU
IFI-U

I
SS-0218
Vesuvius
S. lycopersicum
224,469 SHU
IFI-U

I
SS-0219
Pompeii
S. lycopersicum
299,292 SHU
IFI-U

I
SS-0220
Stromboli
S. lycopersicum
444,357 SHU
IFI-U

I
SS-0221
Etna
S. lycopersicum
586,368 SHU
IFI-U

I
SS-0222
Fuji
S. lycopersicum
725,325 SHU
IFI-U

I
SS-0223
Pinatubo
S. lycopersicum
861,228 SHU
IFI-U

I
SS-0224
Tambora
S. lycopersicum
1,123,872 SHU
IFI-U

I
SS-0225
Yellowstone
S. lycopersicum
1,374,300 SHU
IFI-U

REQUEST A SAMPLE

Academic researchers: request up to 3 constructs as free 10 µg sample kits. platform.scovillesplice.farm/samples — ships within 5–7 business days.

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

READY TO ORDER?

Umami Depth Engineering

25 constructs available now. Free academic samples. Five tiers from Foundational to Summit.

Order at scovillesplice.farm

Email orders@scovillesplice.farm

I	II	III	IV	V
$49	$99	$149	$249	$499
Foundational	Precision	Advanced	Elite	Summit

SCAN TO ORDER THIS CATALOG

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

Related Catalogs

CUSTOMERS WHO REQUESTED THIS ALSO EXPLORED

Based on formulation profiles and research objectives similar to Umami Depth Engineering buyers.

CAT-11

Complete IFI Catalog

All-Axis Series: Full 8-Dimension Construct Library

View catalog →

CAT-24

Umami & Kokumi Depth

Buyer Catalog: Savory Food Development

View catalog →

CAT-13

Solanum Organism Catalog

Tomato & Nightshade Constructs

View catalog →

WHO ELSE DOWNLOADS THIS CATALOG

Savory food developers · Broth & sauce manufacturers · Meat analog formulators

Browse all 38 catalogs at scovillesplice.farm/catalogs

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

Pricing & Variants

DELIVERY FORMATS & ADD-ON SERVICES

Standard Delivery

Lyophilized plasmid in TE buffer. 10 µg minimum. **Certificate of Analysis included.** Ships within 5–7 business days. View sample CoA →

IFI Scorecard Report

Full 8-axis IFI validation data including receptor binding affinities, dose-response curves, and cross-reactivity analysis. +$200 per construct.

Viral Vector Add-on

AAV or lentiviral packaging available for select constructs. +$150–$400 depending on serotype. 2–3 week lead time.

CRISPR HDR Template

Homology-directed repair template for precise genomic insertion. sgRNA included. +$125 per locus.

Codon Optimization

Species-specific codon optimization for *Capsicum*, *Solanum*, tobacco, or custom host. +$75 per construct.

Bulk Licensing

10+ constructs: 15% discount. 25+: 25% discount. 50+: 35% discount. licensing@scovillesplice.farm

ENTERPRISE CUSTOM BUILDS

Dedicated synthesis queue, custom receptor panel, and exclusive licensing available for 50+ construct enterprise agreements. Contact enterprise@scovillesplice.farm for custom pricing.

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

How to Order Samples

SAMPLE REQUEST & PROCUREMENT PROCESS

1. **Create an account** at https://platform.scovillesplice.farm. Academic researchers use institutional email for automatic Tier I pricing. ORCID verification recommended for publication-linked orders.
2. **Complete biosafety certification.** Upload your IBC approval letter or complete our online BSL-1 attestation. Required for all constructs. OFAC compliance check runs automatically.
3. **Select constructs and configure variants.** Use the CRISPR Designer to generate custom sgRNA sequences, or select from pre-validated delivery formats. CRISPR agent gate review applies to select categories.
4. **Request sample or place order.** Sample kits (10 µg each, up to 3 constructs) ship free for academic Tier I. Standard shipping: 5–7 days domestic, 10–14 days international.
5. **Receive your constructs and CoA.** Each shipment includes Certificate of Analysis, sequence verification data, and QR-linked IFI scorecard (if purchased). Report any issues within 30 days for replacement guarantee.

CONTACT

Orders: orders@scovillesplice.farm
Licensing: licensing@scovillesplice.farm
Enterprise: enterprise@scovillesplice.farm
Support: platform.scovillesplice.farm/support

ENTERPRISE LICENSING

T3/T4 commercial licenses, field-of-use exclusivity, and custom synthesis agreements available for CPG, pharma, and agricultural partners. Schedule a call →

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

IFI Quick Reference

IYENGAR FLAVOR INDEX — RECEPTOR PATHWAY MAP

CODE	SENSORY AXIS	RECEPTOR TARGET	SCALE
IFI-H	Heat / Pungency	TRPV1	0–100 scale
IFI-S	Sweetness	TAS1R2-R3	0–100 scale
IFI-U	Umami	mGluR1	0–100 scale
IFI-B	Bitter	TAS2R38	0–100 scale
IFI-K	Kokumi	CaSR	0–100 scale
IFI-C	Cool-Burn	TRPM8	0–100 scale
IFI-P	Sharp / Pungency	TRPA1	0–100 scale
IFI-A	Astringency	PRPs	0–100 scale

SCORING METHODOLOGY

IFI scores are determined by competitive binding assay against purified receptor preparations. Scores represent the EC50-normalized activation percentage at standard assay conditions (pH 7.4, 37°C). Full methodology: doi:10.5281/zenodo.14282732

MULTI-AXIS ANALYSIS

Stacked constructs report IFI as a vector. The IPAP platform interface at platform.scovillesplice.farm/ifi provides interactive radar visualization, pairwise correlation, and blend simulation tools for multi-axis construct stacks.

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026

Research Papers

PEER-REVIEWED PUBLICATIONS — SCOVILLE SPLICE / IPAP

Iyengar Ford, P. (2026). Computational Design of Ten Engineered *Capsicum* Cultivars Spanning 3–13M SHU. *Zenodo*.
https://doi.org/10.5281/zenodo.14282732

Iyengar Ford, P. (2026). Beyond Peppers: Cross-Species Capsaicinoid Engineering. *Zenodo*.
https://doi.org/10.5281/zenodo.14282733

Iyengar Ford, P. (2026). The Iyengar Flavor Index: An 8-Axis Receptor-Validated Sensory Scoring System. *Zenodo*.
https://doi.org/10.5281/zenodo.14282734

Iyengar Ford, P. (2026). TRPV1 Pathway Engineering for Precision Pungency Control. *Zenodo*.
https://doi.org/10.5281/zenodo.14282735

Iyengar Ford, P. (2026). Sweetness Enhancement via TAS1R2-TAS1R3 Heterodimer Modulation. *Zenodo*.
https://doi.org/10.5281/zenodo.14282736

Iyengar Ford, P. (2026). mGluR1-Mediated Umami Intensity Engineering in Tomato and *Capsicum*. *Zenodo*.
https://doi.org/10.5281/zenodo.14282737

Iyengar Ford, P. (2026). Kokumi Perception and CaSR Activation in Engineered Plant Constructs. *Zenodo*.
https://doi.org/10.5281/zenodo.14282738

Iyengar Ford, P. (2026). TRPM8 Cool-Burn Engineering: Mint Pathway Transplantation. *Zenodo*.
https://doi.org/10.5281/zenodo.14282739

Iyengar Ford, P. (2026). TRPA1-Based Pungency Without Capsaicin: Allyl Isothiocyanate Pathways. *Zenodo*.
https://doi.org/10.5281/zenodo.14282740

Iyengar Ford, P. (2026). Astringency Reduction via PRP and Tannin Biosynthesis Engineering. *Zenodo*.
https://doi.org/10.5281/zenodo.14282741

Iyengar Ford, P. (2026). Platform Architecture for the Intelligent Palate Architecture Platform (IPAP). *Zenodo*.
https://doi.org/10.5281/zenodo.14282742

SHARE THIS CATALOG

Download all 38 IPAP catalogs at scovillesplice.farm/catalogs. Share with your team to explore the full construct library.

UP NEXT

CAT-11: Complete IFI Catalog — All-Axis Series: Full 8-Dimension Construct Library

Download that catalog →

Patent Pending 64/172,827 · 64/188,197 · 64/192,062 · ORCID 0000-0003-0395-1752 · v1.0 · November 2026 · All 21 publications available at Zenodo