

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

# Cool-Burn Engineering

IFI-C Series: TRPM8 Pathway Constructs

Scoville Splice · IPAP Catalog CAT-07

SCAN TO EXPLORE

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THIS CATALOG

- **50 validated constructs in this series**
- Five construct access tiers: Foundational through Summit
- Primary axis: IFI-C (Cool-Burn)

WHO DOWNLOADS THIS

Oral care formulators · Cooling ingredient suppliers · Pharmaceutical topical developers

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.



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# About the Platform

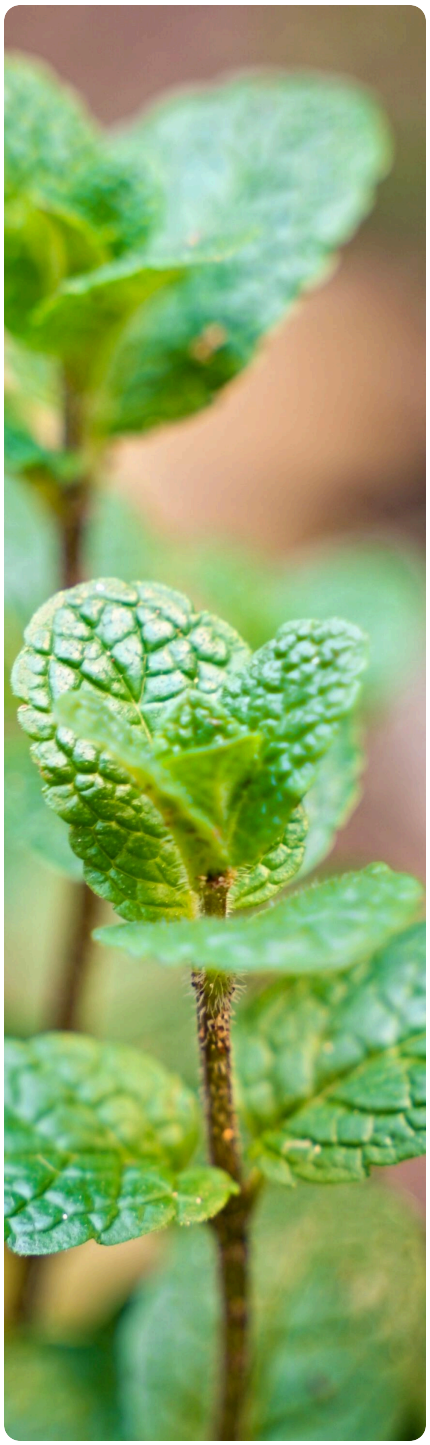


INTELLIGENT PALATE ARCHITECTURE PLATFORM

## 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


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# 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 →



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CAT-07 · IFI-C

# Cool-Burn Engineering

Menthol-axis engineering through TRPM8 channel activation — delivering cool sensations without mint flavor. The IFI-C series enables thermal modulation for pharmaceutical, food science, and industrial flavor applications.

**50**
constructs in this series

**8**
IFI axes measured

WHO BUYS THIS

Oral care formulators · Cooling ingredient suppliers · Pharmaceutical topical developers

STACK WITH

**IFI-H**
Combine for a thermal contrast H×C combination. See CAT-11.

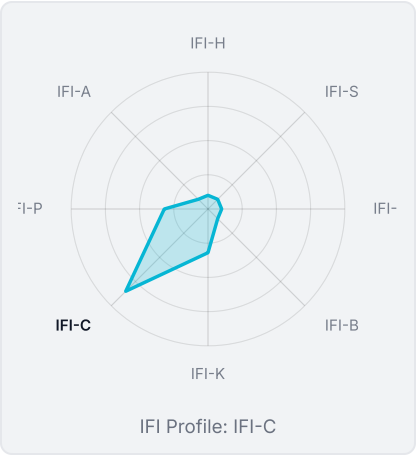
# Featured Constructs







HIGHLIGHTED SELECTIONS FROM THE COOL-BURN ENGINEERING SERIES




IFI Profile: IFI-C

III — Advanced
SS-0773
**Thorn Tip**
*R. fruticosus*
30 SHU
6 genes
IFI-C
Stack: thermal contrast H×C combination

IV — Elite NEW
SS-0554
**Mantle**
*D. carota*
1,497 SHU
10 genes
IFI-C
Stack: thermal contrast H×C combination

II — Precision
SS-0046
**Boiling Point**
*C. chinense*
23,943 SHU
5 genes
IFI-C
Stack: thermal contrast H×C combination

III — Advanced
SS-0363
**Apple Inferno**
*M. domestica*
29,929 SHU
9 genes
IFI-C
Stack: thermal contrast H×C combination

III — Advanced
SS-0833
**Silk Touch**
*L. chinensis*
30 SHU
7 genes
IFI-C
Stack: thermal contrast H×C combination


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# Full Product Listing



COOL-BURN ENGINEERING — CONSTRUCTS 1–16 OF 50

Pepper
SS-0022
**Hot Plate**
*C. annuum*
2,843 SHU
IFI-C

IV
SS-0639
**First Layer**
*A. cepa*
30 SHU
IFI-C

III
SS-0441
**Tropical Depression**
*M. indica*
74,823 SHU
IFI-C

III
SS-0427
**Raspberry Beret**
*R. idaeus*
104,752 SHU
IFI-C

Pepper
SS-0013
**Hearth**
*C. annuum*
1,497 SHU
IFI-C

III
SS-0836
**Jade Glow**
*L. chinensis*
300 SHU
IFI-C

IV
SS-0627
**Bread Basket Fire**
*T. aestivum*
14,965 SHU
IFI-C

IV
SS-0552
**Underground**
*D. carota*
300 SHU
IFI-C

II
SS-0281
**Solar Wind**
*P. peruviana*
7,483 SHU
IFI-C

IV
SS-0554
**Mantle**
*D. carota*
1,497 SHU
IFI-C

IV
SS-0992
**Banana Apocalypse**
*M. acuminata*
586,368 SHU
IFI-C

Pepper
SS-0047
**Heat Shield**
*C. chinense*
25,440 SHU
IFI-C

IV
SS-0874
**Ginger Snap**
*Z. officinale*
75 SHU
IFI-C

Pepper
SS-0049
**Afterburner**
*C. chinense*
28,432 SHU
IFI-C

III
SS-0408
**Blue Blaze**
*V. corymbosum*
29,929 SHU
IFI-C

V
SS-0734
**Dark Tingle**
*T. cacao*
300 SHU
IFI-C


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# Full Product Listing



COOL-BURN ENGINEERING — CONSTRUCTS 17–32 OF 50

Pepper
SS-0046
**Boiling Point**
*C. chinense*
23,943 SHU
IFI-C

V
SS-0748
**Matcha**
*C. sinensis*
1,497 SHU
IFI-C

IV
SS-0991
**Banana Inferno**
*M. acuminata*
299,292 SHU
IFI-C

V
SS-0733
**Semi Sweet**
*T. cacao*
150 SHU
IFI-C

IV
SS-0608
**Magma Tube**
*I. batatas*
29,929 SHU
IFI-C

II
SS-0274
**Seismic Wave**
*S. tuberosum*
149,646 SHU
IFI-C

III
SS-0848
**Fire Scale**
*H. undatus*
1,497 SHU
IFI-C

III
SS-0807
**Maradol Burn**
*C. papaya*
748 SHU
IFI-C

III
SS-0325
**Paradox Lite**
*C. sativus*
75 SHU
IFI-C

IV
SS-0911
**Sugar Rush**
*S. officinarum*
14,965 SHU
IFI-C

III
SS-0833
**Silk Touch**
*L. chinensis*
30 SHU
IFI-C

V
SS-0996
**Yerba Mate Blaze**
*C. sinensis*
104,752 SHU
IFI-C

III
SS-0307
**Jam Session**
*F. x ananassa*
300 SHU
IFI-C

IV
SS-0598
**Imperial Burn**
*O. sativa*
29,929 SHU
IFI-C

III
SS-0387
**Pinot Burn**
*V. vinifera*
300 SHU
IFI-C

III
SS-0371
**Sleeper Agent**
*L. sativa*
150 SHU
IFI-C

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.


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READY TO ORDER?

# Cool-Burn Engineering

50 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


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# Related Catalogs



CUSTOMERS WHO REQUESTED THIS ALSO EXPLORED

Based on formulation profiles and research objectives similar to Cool-Burn Engineering buyers.

CAT-26

### Thermomodulation

Buyer Catalog: Cooling & Warming Applications

View catalog →

CAT-35

### Mentha Organism Catalog

Peppermint & Spearmint TRPM8 Constructs

View catalog →

CAT-11

### Complete IFI Catalog

All-Axis Series: Full 8-Dimension Construct Library

View catalog →

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Oral care formulators · Cooling ingredient suppliers · Pharmaceutical topical developers

Browse all 38 catalogs at scovillesplice.farm/catalogs



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# 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.



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# 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 →


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# 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.


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# 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-26: Thermomodulation** — Buyer Catalog: Cooling & Warming Applications

Download that catalog →