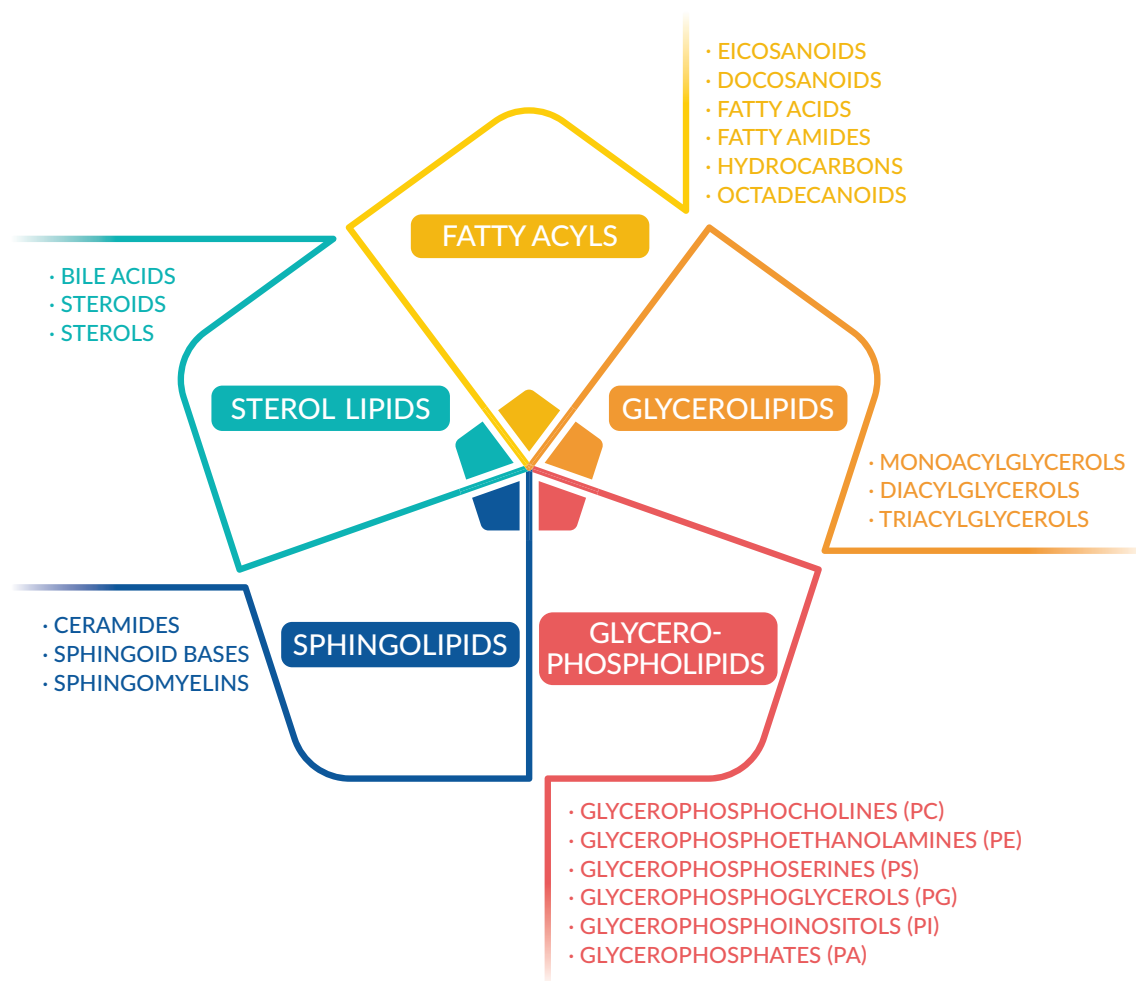


Lipidomics Standards and Research Tools



With more than 35 years of experience in producing high quality research tools, Cayman Chemical is your partner in lipid research. Our scientists are experts in the synthesis, purification, and characterization of complex biolipids, fatty acids, and endogenous metabolites. We are renowned for our vast expertise in biochemistry involving the arachidonic acid cascade, resolvins, cannabinoids, and many other biochemicals, which has led to the production of a growing library of qualitative research chemicals and quantitative MaxSpec® standards for lipidomic and metabolomic studies. We also offer custom organic synthesis services for unique compounds and a wide range of analytical services using LC-MS/MS, HPLC, GC, and many other techniques.

- Ready-to-use, quantitative MaxSpec® standards
- High-purity, qualitative research standards
- Stable isotope-labeled standards
- Custom lipid synthesis, including stable isotope labeling
- Lipidomic profiling services



LOOK INSIDE TO
LEARN MORE

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Mass Spec Standards
& Services

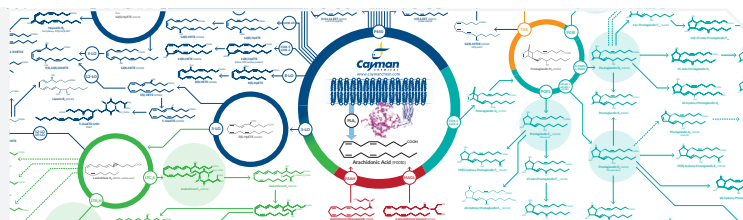
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Glycerolipids
Sphingolipids
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Fatty Acyls

Eicosanoids: The major branches of the arachidonic acid cascade represent the metabolism of polyunsaturated fatty acids into potent mediators with far-ranging physiological effects. These metabolites include prostaglandins, isoprostanes, thromboxanes, leukotrienes, lipoxins, and hydroperoxy, hydroxy, epoxy, and oxo fatty acids. Cayman Chemical has pioneered the production of synthetically pure versions of these lipids and developed methods for their accurate measurement. From the most well-known to the very obscure, we offer thousands of high-purity standards for this area of research.

Request the full Arachidonic Acid Cascade wall poster at www.caymanchem.com/Literature



Leukotrienes

Item No.	Product Name
20010	Leukotriene A ₄ methyl ester
20109	Leukotriene B ₃
20110	Leukotriene B ₄
320110	Leukotriene B ₄ -d ₄
20210	Leukotriene C ₄
10006198	Leukotriene C ₄ -d ₅
20310	Leukotriene D ₄
10006199	Leukotriene D ₄ -d ₅
20410	Leukotriene E ₄
10007858	Leukotriene E ₄ -d ₅

Common leukotrienes listed, over 45 leukotrienes available online

Hydroxy/Hydroperoxy/Epoxy/Oxo Eicosanoids

Item No.	Product Name
18343	(±)5(6)-DiHETE lactone
50651	(±)14(15)-EET
50861	(±)17(18)-EpETE
32550	12(S)-HEPE
32840	(±)18-HEPE
34570	12(S)-HETE
334570	12(S)-HETE-d ₈
34720	15(S)-HETE
90030	20-HETE

Common hydroxy/hydroperoxy/epoxy/oxo eicosanoids listed, over 180 available online

Prostaglandins

Item No.	Product Name
10010	Prostaglandin A ₁
12010	Prostaglandin D ₂
14010	Prostaglandin E ₂
14720	15-keto Prostaglandin E ₂
14750	16,16-dimethyl Prostaglandin E ₂
16010	Prostaglandin F _{2α}
16350	8-iso Prostaglandin F _{2α}
17020	Prostaglandin H ₂
18220	Prostaglandin I ₂ (sodium salt)
18570	15-deoxy-Δ ^{12,14} -Prostaglandin J ₂

Common prostaglandins listed, over 425 prostaglandins available online

Thromboxanes

Item No.	Product Name
19010	Carbocyclic Thromboxane A ₂
19030	Thromboxane B ₂
319030	Thromboxane B ₂ -d ₄
19500	11-dehydro Thromboxane B ₂
319500	11-dehydro Thromboxane B ₂ -d ₄
19050	2,3-dinor Thromboxane B ₂
10009584	2,3-dinor Thromboxane B ₂ -d ₉
19990	Thromboxane B ₃
19995	11-dehydro Thromboxane B ₃

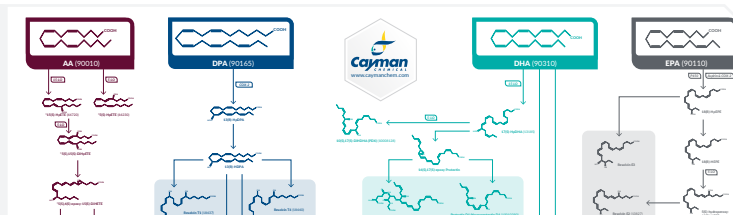
Common thromboxanes listed, over 20 thromboxanes available online

To view a complete list of Fatty Acyls,
visit us online at www.caymanchem.com



Specialized Pro-Resolving Mediators: An important group of signaling molecules derived from arachidonic acid, eicosapentaenoic acid, docosahexaenoic acid, and docosahexaenoic acid is liberated during the inflammatory process and performs key immunoregulatory actions. Studies have shown that resolvins, lipoxins, maresins, and protectins evoke responses that help to resolve an inflammatory episode back to a non-inflamed state. Cayman has synthesized an array of these key lipid mediators to aid in a better understanding of this process.

Request the full Specialized Pro-Resolving Mediators wall poster at www.caymanchem.com/Literature



Resolvins

Item No.	Product Name
10012554	Resolvin D1
13060	17(R)-Resolvin D1
10007279	Resolvin D2
11184	Resolvin D2-d ₅
13834	Resolvin D3
10007280	Resolvin D5
10007848	Resolvin E1

Common resolvins listed, more resolvins available online

Lipoxins

Item No.	Product Name
90410	Lipoxin A ₄
90420	Lipoxin B ₄

Common lipoxins listed, more lipoxins available online

Maresins

Item No.	Product Name
10878	Maresin 1
16369	Maresin 2

Common maresins listed, more maresins available online

Fatty Acids: Fatty acids are categorized into several groups based on the length of their aliphatic chain. Among their important biological functions, they serve as building blocks of amphipathic molecules. Cayman offers various important essential fatty acids as well as endogenous fatty acids, including those that serve as precursors in the production of many other lipids. This includes the family of bioactive lipids formed by the conjugation of fatty acids to simple amines such as ethanolamine or monoamine neurotransmitters such as dopamine, taurine, serotonin, or GABA.

Essential Fatty Acids

Item No.	Product Name
90010	Arachidonic Acid
390010	Arachidonic Acid-d ₈
90310	Docosahexaenoic Acid
10005057	Docosahexaenoic Acid-d ₅
90110	Eicosapentaenoic Acid
10005056	Eicosapentaenoic Acid-d ₅

Common essential fatty acids listed, over 300 fatty acids available online

MaxSpec® Standards

MAXIMIZE RESULTS

A line of ready-to-use, quantitative standards prepared specifically for mass spectrometry applications.

MaxSpec® Quality Guarantee

- ✓ Verified concentration
- ✓ LC-MS identity tested
- ✓ HPLC purity tested
- ✓ Ongoing stability testing

Mass Spectrometry Standards



Ready-to-Use, Quantitative Standards

Achieve quantitative accuracy and interlaboratory reproducibility with Cayman's new line of MaxSpec® standards and kits for mass spectrometry. MaxSpec® products are formulated as ready-to-use solutions to accelerate workflows and are guaranteed to meet rigorous quality standards.

MaxSpec® Quality Guarantee

- ✓ Verified concentration
- ✓ LC-MS identity tested
- ✓ HPLC purity tested
- ✓ Ongoing stability testing



Prostaglandins

Item No.	Product Name
10007202	Prostaglandin D ₂ MaxSpec® Standard
10007272	Prostaglandin D ₂ -d ₄ MaxSpec® Standard
10007208	13,14-dihydro-15-keto Prostaglandin D ₂ MaxSpec® Standard
10007211	Prostaglandin E ₂ MaxSpec® Standard
10007273	Prostaglandin E ₂ -d ₄ MaxSpec® Standard
10007214	13,14-dihydro-15-keto Prostaglandin E ₂ MaxSpec® Standard
25372	13,14-dihydro-15-keto Prostaglandin E ₂ -d ₄ MaxSpec® Standard
25900	Prostaglandin F _{1α} MaxSpec® Standard
10007219	6-keto Prostaglandin F _{1α} MaxSpec® Standard
10007221	Prostaglandin F _{2α} MaxSpec® Standard
10007275	Prostaglandin F _{2α} -d ₄ MaxSpec® Standard

Common prostaglandins and their internal standards listed, over 20 available online

Hydroxy/Hydroperoxy/Epoxy/Oxo Eicosanoids

Item No.	Product Name
10007265	(±)8(9)-DiHET MaxSpec® Standard
10007243	5(S)-HETE MaxSpec® Standard
10007248	12(S)-HETE MaxSpec® Standard
10007269	20-HETE MaxSpec® Standard

Common hydroxy/hydroperoxy/epoxy/oxo eicosanoids standards listed, over 20 available online

Additional Fatty Acyls

Item No.	Product Name
10007270	Arachidonoyl Ethanolamide MaxSpec® Standard
10007240	Leukotriene B ₄ MaxSpec® Standard
10007271	Lipoxin A ₄ MaxSpec® Standard
10007237	Thromboxane B ₂ MaxSpec® Standard

Qualitative, Multi-Component LC-MS Mixtures

Cayman's fatty acid and eicosanoid mixtures contain 3-20 different compounds and are designed to accelerate workflows and reduce variability. Each mixture undergoes batch-specific LC-MS content analysis and ongoing stability testing to ensure quality.

Mixtures available for

- Bioactive Eicosanoids, Precursors, & Metabolites
- Hydroxy/Hydroperoxy/Epoxy/Oxo Eicosanoids
- Specialized Pro-Resolving Mediators
- Dietary & Microbiome-Related Fatty Acids
- Vasoactive Eicosanoids
- Oxidative Stress

Looking to create a custom mass spec mixture?

Email us at sales@caymanchem.com

Lipidomic Profiling Services



Put your lipidomics study in the hands of lipid experts who have decades of collective experience in lipid synthesis, purification, and characterization. Cayman's state-of-the-art mass spectrometry laboratories are equipped with high-resolution Orbitrap and triple quadrupole MS, enabling Cayman to offer targeted and untargeted lipidomics services to meet your specific project needs.

Maximize Your Data with Customizable Lipid Panels

Cayman offers a suite of multiplex lipid panels that offer the sensitivity, efficiency, and specificity needed to identify and quantify biologically relevant lipids.

- Eicosanoids
- Sphingolipids
- Oxidized Phospholipids
- Phospholipids (untargeted)
- Endocannabinoids
- Short-Chain Fatty Acids
- Cholesterol Esters
- Urinary Lipid Metabolites

Eicosanoids 44-Plex Panel

Cyclooxygenase

6-keto PGF_{1α}
TXB₂
PGF_{2α}
PGE₂
PGD₂
PGA₂
PGJ₂
15-deoxy-Δ^{12,14}-PGJ₂
12-HHTrE
11-dehydro TXB₂
11-HETE

5-Lipoxygenase

LTB₄
LTC₄
LTD₄
LTE₄
20-hydroxy LTB₄
20-carboxy LTB₄
5(6)-DiHETE
5-HETE
5-OxoETE
LXA₄
LXB₄

Other Lipoxygenases and P450

5(6)-EET
8(9)-EET
11(12)-EET
14(15)-EET
5(6)-DiHET
8(9)-DiHET
11(12)-DiHET
14(15)-DiHET
12-HETE
15-HETE
20-HETE

Others (Not from AA)

9-HODE
13-HODE
17-HDHA
18-HEPE
RvD1
RvD2
RvD3
RvD4
RvE1
MaR1
PD₁

Internal Standards

TXB₂-d₄
PGE₂-d₄
LTD₄-d₅
LXA₄-d₅
LTB₄-d₄
(±)14(15)-DiHET-d₁₁
(±)14(15)-EET-d₁₁
9(S)-HODE-d₄
5(S)-HETE-d₈
RvD1-d₅
RvE1-d₄

Example Panel

Service Includes:

- Project consultation and customized proposal generation
- Sample preparation (homogenization, extraction, enrichment as needed)
- LC-MS/MS analysis, data collection, and reporting

Learn more or request a quote at www.caymanchem.com/lipidomics

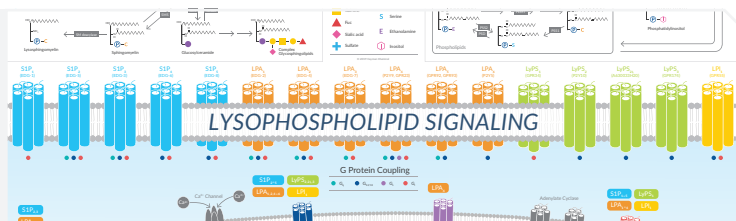
• Glycerolipids • Sphingolipids

• Glycerophospholipids



Sphingolipids: Ceramide is the intermediate in the formation of multiple types of sphingolipids: sphingosine, sphingomyelin, ceramide-1-phosphate, glucosylceramide, and galactosylceramide. These lipids modulate cell-cell interactions and are important for various cellular functions, including differentiation, proliferation, and programmed cell death. Cayman carries many different ceramide and sphingolipid research tools to help you study distinct aspects of this important lipid signaling pathway.

Request the full Lysophospholipid Signaling wall poster at www.caymanchem.com/Literature



Sphingolipids

Item No.	Product Name
62527	C6 NBD Ceramide (d18:1/6:0)
10681	C16 Ceramide (d18:1/16:0)
22442	EOS (d18:1/32:1/18:2)
20338	Galactosylsphingosine (d18:1)
10007945	Sphinganine (d18:0)
10007907	Sphingosine (d18:1)
62570	Sphingosine-1-phosphate (d18:1)

Common sphingolipids listed, over 225 sphingolipids available online

Glycerolipids: Glycerolipids are composed of mono-, di-, or trisubstituted glycerols. Diacylglycerols are produced by the PLC-dependent hydrolysis of membrane phospholipids and act as lipid second messengers. Esters formed from arachidonic acid linked to glycerol are known as endocannabinoids.

Glycerolipids

Item No.	Product Name
62160	2-Arachidonoyl Glycerol
362162	2-Arachidonoyl Glycerol-d ₅
362160	2-Arachidonoyl Glycerol-d ₈
62225	1,2-Dioctanoyl- <i>sn</i> -glycerol
10009872	1-Stearoyl-2-Arachidonoyl-d ₈ - <i>sn</i> -Glycero
16489	1,2,3-Triheptadecanoyl- <i>rac</i> -glycerol

Common glycerolipids listed, over 200 glycerolipids available online

Glycerophospholipids: Glycerophospholipids are a major component of cell membranes, forming lipid bilayers due to their amphiphilic nature. The phosphate group can be modified with simple organic molecules such as choline or ethanolamine. Glycerophospholipids have been widely used to prepare nanoformulations for drug delivery or other types of artificial membranes.

Glycerophosphocholines (PC) & Glycerophosphoethanolamines (PE)

Item No.	Product Name
15098	1,2-Dioleoyl- <i>sn</i> -glycero-3-PC
15091	1,2-Dioleoyl- <i>sn</i> -glycero-3-PE
10172	1-Palmitoyl-2-hydroxy- <i>sn</i> -glycero-3-PC
10044	PGPC
10031	POV-PC
21139	1-Stearoyl-2-15(S)-HETE- <i>sn</i> -glycero-3-PE
25856	1-Stearoyl-2-15(S)-HpETE- <i>sn</i> -glycero-3-PE

Platelet-Activating Factors

Item No.	Product Name
60900	PAF C-16
360900	PAF C-16-d ₄
60906	Lyso-PAF C-16
60908	Methylcarbanyl PAF C-16
60912	2-O-methyl PAF C-18
60945	2-thio-PAF

Over 175 glycerophospholipids available online

Sterol Lipids

These naturally occurring lipids are derived from hydroxylated polycyclic isopentenoids and are known to have a wide range of biological activities and physical properties, from sustaining the domain structure of cell membranes to orchestrating signaling actions throughout the body. Cayman offers a wide range of primary and secondary bile acids, SCFAs, polyamines, and additional related metabolites for this important area of research.



Bile Acids

Item No.	Product Name
10011286	Chenodeoxycholic Acid
20250	Cholic Acid
9002532	Cholic Acid 7-sulfate
16942	Glycochenodeoxycholic Acid (sodium salt)
22670	Glycohyocholic Acid
21723	Glycolithocholic Acid
20253	Lithocholic Acid
20291	α -Muricholic Acid
20287	β -Muricholic Acid
20290	Murideoxycholic Acid
20275	Taurochenodeoxycholic Acid (sodium salt)
16215	Taurocholic Acid (sodium salt)
9002538	Taurocholic Acid 3-sulfate
15935	Taurodeoxycholic Acid (sodium salt)
22669	Taurohyocholic Acid
17275	Tauroolithocholic Acid (sodium salt)
20277	Tauroursodeoxycholic Acid
15121	Ursodeoxycholic acid (sodium salt)

Common bile acids listed, over 25 bile acids and their internal standards available online

Steroids

Item No.	Product Name
15273	Aldosterone
15728	Dehydroepiandrosterone
16146	17 α ,20 β -Dihydroxy-4-pregnen-3-one
10006315	17 β -Estradiol
13019	2-Hydroxyestradiol
16145	20-hydroxy Ecdysone
18226	Hydrocortisone 21-hemisuccinate (sodium salt)
10006318	Levonorgestrel
20798	Marinobufagenin
10006317	Mifepristone
10008519	6 β -hydroxy Testosterone

Common steroids listed, over 200 steroids available online

Oxysterols

Item No.	Product Name
16339	7-keto Cholesterol
10009931	24(S)-hydroxy Cholesterol
11097	25-hydroxy Cholesterol
14790	25(R)-27-hydroxy Cholesterol

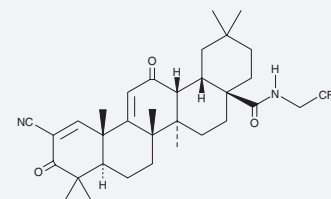
Common oxysterols listed, over 30 oxysterols available online

Custom Synthesis Spotlight

When our customer needed to optimize blood-brain barrier transport of CDDO in their experimental model, we synthesized this trifluoroethylamide derivative.

CDDO-TFEA - Item No. 90001845

A trifluoroethylamide derivative of CDDO that enhances Nrf2 expression and signaling in various models of neurodegeneration; demonstrates anticancer activity against several neuroblastoma cell lines with IC_{50} s = 85-170 nM



**Synthetic Triterpenoid
Enhances Nrf2 Expression**

Request a quote for a custom synthesis of your particular lipid
at www.caymanchem.com/chemicalsynthesis



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