

## FivePrime Therapeutics Inc

### COMPANY AND PIPELINE OVERVIEW REPORT

Coverage of the company and a summary of the drug pipeline portfolio.

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## GLOSSARY

### Number of Drugs in Active Development

Number of drugs associated with the company or subsidiary that are currently in active development, i.e. the development status for the drug(s) is one of the following: Discovery, Clinical, Phase I, Phase II, Phase III, Pre-registration, Registered, Launched, or Suspended.

### Number of Inactive Drugs

Number of drugs associated with the company or subsidiary that are currently classified as inactive, i.e. where the development status for the drug(s) is one of the following: No Development Reported, Discontinued, or Withdrawn.

### Number of Patents as Owner

Number of patents associated with the company where the company is listed as owner; i.e. the relationship type (or way the patent refers to the company) is: Patent Assignee/Owner, Patent owner (not assignee), Licensee for development and marketing, Licensee – marketing only (Distributor), Patent assignee of family member, Inferred assignee.

### Number of Patents as Third Party

Number of patents associated with the company where the company is listed as third party; i.e. the relationship type (or way the patent refers to the company) is: Patent assignee (not owner), Ex-Licensee for development and marketing, Ex-Licensee marketing only (Distributor), Customer of technology, Ex-Customer of technology, Patent opponent or infringer, Affiliate organization of inventor, Owner of underlying technology.

### Patents summary table

This table represents a summary of the core patent coverage for this company covering Therapeutic EP, US and WO patents since 1990 only.

### Number of Deals

A count of deals where the company or one of its subsidiaries is the primary company.

### Key Indications

Displays top ten key indications for the company and its subsidiaries based on frequency (indications occurring with high and identical frequency are always included, and this may result in more than ten Key Indications being listed). Includes both indications associated with patents where the company is patent owner and indications associated with drugs in active development. A drug is classified as 'active' if it features on a row (or rows) in the current development status table where the status is one of the following: Discovery, Clinical, Phase I, Phase II, Phase III, Pre-registration, Registered, Launched, or Suspended.

### Key Target-based Actions

Displays top ten key target-based actions for the company and its subsidiaries based on frequency (actions occurring with high and identical frequency are always included, and this may result in more than ten Key Target-based Actions being listed). Includes both target-based actions associated with patents where the company patent owner and target-based actions associated with drugs in active development. A drug is classified as 'active' if it features on a row (or rows) in the current development status table where the status is one of the following: Discovery, Clinical, Phase I, Phase II, Phase III, Pre-registration, Registered, Launched, or Suspended. A target-based action is one that is associated with a target.

### Key Technologies

Displays top ten key technologies for the company and its subsidiaries based on frequency (technologies occurring with high and identical frequency are always included, and this may result in more than ten Key Technologies being listed). Includes both key technologies associated with patents where the company relationship is patent owner and key technologies associated with drugs in active development. A drug is classified as 'active' if it features on a row (or rows) in the current development status table where the status is one of the following: Discovery, Clinical, Phase I, Phase II, Phase III, Pre-registration, Registered, Launched, or Suspended.

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# FivePrime Therapeutics Inc

## COMPANY OVERVIEW

Company Name	FivePrime Therapeutics Inc
Parent Company Name	FivePrime Therapeutics Inc
Website	http://www.fiveprime.com/
Country	US
Number of Drugs in Active Development	7
Number of Inactive Drugs	12
Number of Patents as Owner	41
Number of Patents as Third Party	1
Number of Deals	13
Key Indications	Cancer,Chronic obstructive pulmonary disease,Endometrioid carcinoma,Osteoarthritis,Asthma,Autoimmune disease,Stomach tumor,Cachexia,Fibrosis,Idiopathic pulmonary fibrosis,Musculoskeletal disease,Sarcopenia,Unidentified indication
Key Target-based Actions	FGF1 receptor antagonist,FGF2 receptor antagonist,CSF-1 antagonist,Amphiregulin ligand modulator,Extracellular signal related kinase-1 stimulator,Extracellular signal related kinase-2 stimulator,IL antagonist,Insulin sensitizer,Interleukin 27 alpha ligand modulator,Albumin agonist,CSF-1 agonist
Key Technologies	Biological therapeutic,Parenteral formulation unspecified,Peptide,Protein recombinant,Antibody,Monoclonal antibody humanized,Protein fusion,Antibody fragment,Immunoglobulin-G,Infusion,Intravenous formulation,Small molecule therapeutic

## COMPANY PROFILE

### SUMMARY

FivePrime Therapeutics Inc was set up in 2002 by the founder of Chiron Corp to speed the discovery and development of first in-class protein and antibody drugs. The company has integrated multiple technologies into a discovery engine that enables systematic, high-throughput screening of whole sets of secreted proteins and receptors to address unmet medical needs in the areas of oncology and immunology.

### COMPANY LOCATION

In October 2010, the company relocated to a new drug discovery facility in South San Francisco, CA.

In December 2005, FivePrime relocated from South San Francisco, CA, to Mission Bay, San Francisco, CA.

### LICENSING AGREEMENTS

In May 2008, FivePrime entered into a collaborative research program with Pfizer to discover and develop novel antibody targets and therapeutic proteins in the fields of diabetes and cancer. The collaboration would use FivePrime's rapid protein discovery platform, which screens FivePrime's target libraries using cell-based assays and in vivo, high-throughput screening techniques. FivePrime would receive an upfront payment, equity investment and research funding for three years, while Pfizer was granted exclusive worldwide development and commercialization rights to any emerging compounds in return for future milestone and royalty payments.

In January 2007, Five Prime Therapeutics signed a worldwide collaborative research and license agreement with Centocor which would focus on novel therapeutics for osteoarthritis and pulmonary fibrosis. FivePrime would screen its comprehensive protein library against cell-based assays directed to osteoarthritis and fibrosis and Centocor would have exclusive rights to the proteins and targets identified. In February 2010, FivePrime received a milestone payment from Centocor for the selection of a therapeutic for the potential treatment of immunology-related indications.

In April 2006, FivePrime entered a \$75 million, 2-year research deal with Boehringer Ingelheim to discover rheumatoid arthritis drugs. FivePrime would receive an upfront fee, research support, milestones and royalties, while Boehringer gained exclusive global rights to develop and commercialize any products and targets discovered. The basis of the deal

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was FivePrime's protein screening library of all human secreted proteins and their receptors.

In February 2006, Biosite granted FivePrime access to its Omniconal antibodies for use in therapeutic research programs. In return, Biosite would be able to use FivePrime's functional disease targets for the development of diagnostics.

By April 2004, FivePrime had established a strategic technology collaboration with Dnaform Inc, granting FivePrime the rights to use Dnaform's high-throughput cloning technologies for the creation of full length human cDNA libraries.

## EARLY R&D

In May 2008, researchers from the company published a paper describing the discovery of interleukin-34 (IL-34) and the identification of its receptor. IL-34 was found to be highly specific in increasing the viability of primary monocyte while having no activity against other cell types.

By April 2006, the company was researching FPT-025, a cytokine that expands monocytes and participates in early differentiation of dendritic cells. At that time, the agent's potential in oncology, inflammation and infectious disease was being looked at.

By April 2004, the company was in hit validation for immune regulation and type 2 diabetes, in high-throughput screening for lymphogenesis, and in target validation in oncology. Novel splice variants of genes implicated in immune modulation had been discovered, and FivePrime had identified novel functions for known genes in the regulation of mature T, B and monocytic cells. Its metabolic disorder studies were focussed on three areas: protein insulin mimetics, protein insulin sensitizers, and protein-based insulin resistance, and the company had identified protein factors that enhance glucose uptake and was validating these for activity in secondary in vitro assays and mouse obesity-driven diabetes models. In lymphogenesis, FivePrime was screening for factors that accelerate and enhance the reconstitution of lymphoid cells for the treatment of immunocompromised cancer patients after bone marrow transplant. In addition the company was pursuing both antibodies to these factors, and proteins that are natural inhibitors of lymphogenesis for treatment of autoimmune and chronic inflammatory diseases. Within its oncology program, the company was developing therapeutic antibodies targeting key members of growth factors and their receptors; FivePrime has used its Whole Set of secreted proteins and receptors to build a microarray (Pharmanome) that contains hundreds of probes for secreted factors, receptors and other druggable targets, and was validating several targets before testing in xenograft models.

## FINANCIAL

In February 2005, FivePrime completed a \$45 million private equity financing.

In September 2003, FivePrime raised \$12 million in a second private financing round.

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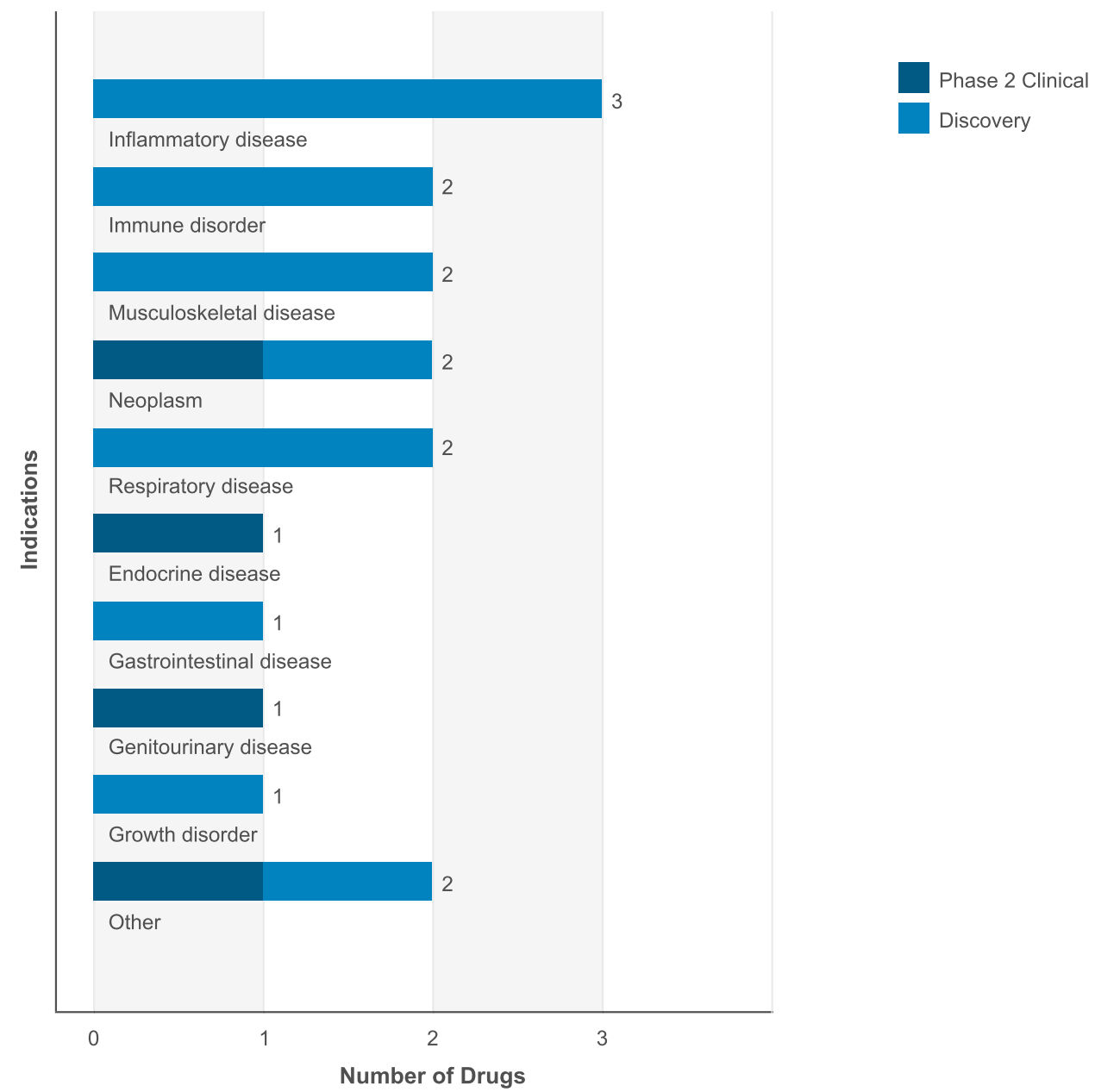


PRODUCT PORTFOLIO SUMMARY

DRUGS

Drugs by Indication

Active Drugs by Indication Chart



Drugs by Indication Table

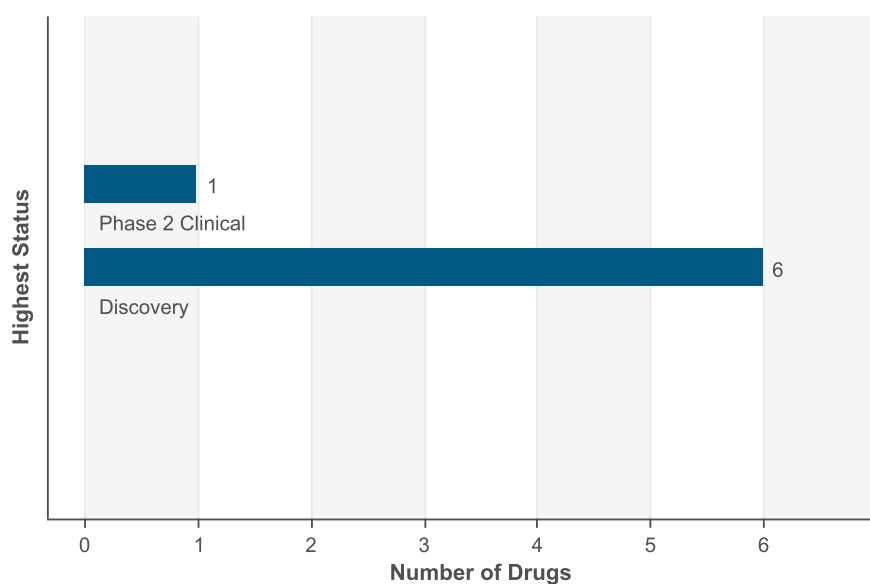
Indication	Active	Inactive	Total
Neoplasm	2	5	7

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Inflammatory disease	3	2	5
Gastrointestinal disease	1	3	4
Endocrine disease	1	2	3
Metabolic disorder	0	3	3
Respiratory disease	2	1	3
Musculoskeletal disease	2	1	3
Immune disorder	2	1	3
Nutritional disorder	1	1	2
Unidentified indication	1	0	1
Genitourinary disease	1	0	1
Infectious disease	0	1	1
Neurological disease	0	1	1
Cardiovascular disease	0	1	1
Gynecology and obstetrics	1	0	1
Growth disorder	1	0	1

### Drugs by Highest Status

Active Drugs by Highest Status Chart



Drugs by Highest Status Table

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Development Status	Number of Drugs
Phase 2 Clinical	1
Discovery	6
No Development Reported	12

## DEALS

Deal Type	Principal		Partner		Total
	Active	Inactive	Active	Inactive	
Drug - Development/Commercialization License	2	0	0	0	2
Drug - Screening/Evaluation	1	0	0	0	2
Drug - Early Research/Development	0	0	1	0	1
Drug - Discovery/Design	2	0	1	0	3
Drug - Funding	1	0	0	0	1
Technology - Other Proprietary	0	0	4	0	4

## CLINICAL TRIALS

### Trials by Condition Studied

Condition Studied	Ongoing	All
Neoplasm	0	3
Gynecology and obstetrics	0	2
Genitourinary disease	0	2
Endocrine disease	0	2

### Trials by Phase

Phase	Ongoing	All
Phase 2	0	2
Phase 1	0	1

## Phase Definitions

### Phase 3 Clinical

Includes Phase 3, Phase 3b, Phase 3a, Phase 2/3 (where enrolment count is 300 or over)

### Phase 2 Clinical

Includes Phase 2, Phase 2a, Phase 2b, Phase 1/2 (where enrolment count is 100 or over), Phase 2/3 (where enrolment count is under 300 or not specified)

### Phase 1 Clinical

Includes Phase 1, Phase 1a, Phase 1, Phase 1/2 (where enrolment count is under 100 or not specified), Phase 0

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## PATENTS \*

Indication	As Owner	As Third Party	Total
Cardiovascular disease	17	0	17
Endocrine disease	20	0	20
Gastrointestinal disease	22	0	22
Genitourinary disease	10	0	10
Growth disorder	1	0	1
Hematological disease	6	0	6
Degeneration	4	0	4
Andrology	5	0	5
Immune disorder	24	0	24
Musculoskeletal disease	13	0	13
Neoplasm	29	0	29
Ocular disease	2	0	2
Genetic disorder	5	0	5
Metabolic disorder	11	0	11
Neurological disease	16	0	16
Nutritional disorder	3	1	4
Respiratory disease	12	0	12
Infectious disease	11	0	11
Injury	1	0	1
Inflammatory disease	21	0	21
Otorhinolaryngological disease	1	0	1
Gynecology and obstetrics	12	0	12
Dermatological disease	15	0	15
Surgical procedure	4	0	4

\* This table represents a summary of the core patent coverage for this company covering Therapeutic EP, US and WO patents since 1990 only.

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## PRODUCT PORTFOLIO DRUGS

**PLEASE NOTE:** Highest status refers to highest development of that drug for one of the active companies

### FP-1039

<b>Drug Name</b>	FP-1039
<b>Key Synonyms</b>	
<b>Originator Company</b>	FivePrime Therapeutics Inc
<b>Active Companies</b>	Human Genome Sciences Inc, FivePrime Therapeutics Inc
<b>Inactive Companies</b>	
<b>Highest Status</b>	Phase 2 Clinical
<b>Active Indications</b>	Cancer, Endometrioid carcinoma
<b>Target-based Actions</b>	FGF1 receptor antagonist
<b>Other Actions</b>	Anticancer protein kinase inhibitor, Angiogenesis inhibitor
<b>Technologies</b>	Antibody fragment, Immunoglobulin-G, Intravenous formulation, Infusion, Biological therapeutic, Protein fusion
<b>Last Change Date</b>	09-Apr-2013

### FPA-144

<b>Drug Name</b>	FPA-144
<b>Key Synonyms</b>	
<b>Originator Company</b>	FivePrime Therapeutics Inc
<b>Active Companies</b>	FivePrime Therapeutics Inc
<b>Inactive Companies</b>	
<b>Highest Status</b>	Discovery
<b>Active Indications</b>	Stomach tumor
<b>Target-based Actions</b>	FGF2 receptor antagonist
<b>Other Actions</b>	Anticancer protein kinase inhibitor, Anticancer monoclonal antibody
<b>Technologies</b>	Monoclonal antibody humanized, Biological therapeutic, Parenteral formulation unspecified
<b>Last Change Date</b>	27-Feb-2013

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## secreted/transmembrane receptor proteins (musculoskeletal disorders), GSK/ FivePrime

<b>Drug Name</b>	secreted/transmembrane receptor proteins (musculoskeletal disorders), GSK/ FivePrime
<b>Key Synonyms</b>	
<b>Originator Company</b>	FivePrime Therapeutics Inc
<b>Active Companies</b>	GlaxoSmithKline plc, FivePrime Therapeutics Inc
<b>Inactive Companies</b>	
<b>Highest Status</b>	Discovery
<b>Active Indications</b>	Sarcopenia, Musculoskeletal disease, Cachexia
<b>Target-based Actions</b>	
<b>Other Actions</b>	Unspecified drug target, Musculoskeletal system modulator
<b>Technologies</b>	Biological therapeutic, Parenteral formulation unspecified, Protein recombinant
<b>Last Change Date</b>	28-Feb-2013

## FPA-008

<b>Drug Name</b>	FPA-008
<b>Key Synonyms</b>	
<b>Originator Company</b>	FivePrime Therapeutics Inc
<b>Active Companies</b>	FivePrime Therapeutics Inc
<b>Inactive Companies</b>	
<b>Highest Status</b>	Discovery
<b>Active Indications</b>	Fibrosis, Autoimmune disease
<b>Target-based Actions</b>	CSF-1 antagonist
<b>Other Actions</b>	Anti-inflammatory
<b>Technologies</b>	Monoclonal antibody humanized, Biological therapeutic, Parenteral formulation unspecified
<b>Last Change Date</b>	28-Feb-2013

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### therapeutic peptide program (osteoarthritis/pulmonary fibrosis), FivePrime/ Janssen Biotech

<b>Drug Name</b>	therapeutic peptide program (osteoarthritis/pulmonary fibrosis), FivePrime/ Janssen Biotech
<b>Key Synonyms</b>	
<b>Originator Company</b>	FivePrime Therapeutics Inc
<b>Active Companies</b>	FivePrime Therapeutics Inc, Janssen Biotech Inc
<b>Inactive Companies</b>	
<b>Highest Status</b>	Discovery
<b>Active Indications</b>	Idiopathic pulmonary fibrosis, Osteoarthritis
<b>Target-based Actions</b>	
<b>Other Actions</b>	Anti-inflammatory, Fibrosuppressant, Respiratory system agent
<b>Technologies</b>	Biological therapeutic, Parenteral formulation unspecified, Peptide
<b>Last Change Date</b>	28-Feb-2013

### therapeutic antibody program, Dyax/FivePrime Therapeutics

<b>Drug Name</b>	therapeutic antibody program, Dyax/FivePrime Therapeutics
<b>Key Synonyms</b>	
<b>Originator Company</b>	FivePrime Therapeutics Inc
<b>Active Companies</b>	FivePrime Therapeutics Inc, Dyax Corp
<b>Inactive Companies</b>	
<b>Highest Status</b>	Discovery
<b>Active Indications</b>	Unidentified indication
<b>Target-based Actions</b>	
<b>Other Actions</b>	Unspecified drug target
<b>Technologies</b>	Antibody, Biological therapeutic, Parenteral formulation unspecified
<b>Last Change Date</b>	07-Nov-2012

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## FPA-126

<b>Drug Name</b>	FPA-126
<b>Key Synonyms</b>	
<b>Originator Company</b>	FivePrime Therapeutics Inc
<b>Active Companies</b>	GlaxoSmithKline plc, FivePrime Therapeutics Inc
<b>Inactive Companies</b>	
<b>Highest Status</b>	Discovery
<b>Active Indications</b>	Asthma, Chronic obstructive pulmonary disease
<b>Target-based Actions</b>	Interleukin 27 alpha ligand modulator
<b>Other Actions</b>	Respiratory system agent, Anti-inflammatory
<b>Technologies</b>	Antibody, Biological therapeutic, Parenteral formulation unspecified, Protein recombinant
<b>Last Change Date</b>	28-Feb-2013

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