

## Blood & Lymphatic System

Blood is one of the most important tissues in our body. It consists of red blood cells (carrying gases and giving it the red color), white blood cells (leukocytes that fight disease) and platelets (clotting agents), which are all suspended in fluid called plasma. Blood has many functions: carrying of oxygen to tissues, supplying nutrients to cells, waste removal, immunological functions, coagulation, messenger functions, pH regulation, body temperature regulation, and hydraulic functions. Blood is pumped through the body by the heart, gravity, and muscles. Problems with the composition or circulation of the blood can lead to tissue dysfunction and death, as well as a host of other problems in every cell and tissue throughout the body.

The lymphatic system is a complex network of lymph nodes, ducts, and vessels that produce and transport lymph fluid from the tissues to the circulatory system. It has three major functions: removal of excess tissue fluid, absorption and transport of fat to the circulatory system, and production of immune cells. Lymph originates as blood plasma from the capillaries and becomes the fluid that fills the spaces between cells and tissues. The thymus, spleen, lymph nodes, tonsils, appendix and bone marrow are part of the system and their proper function depends on the lymphatic system.

## Anemia

Anemia is characterized by a lower than normal red blood cell (erythrocyte) count in the blood. This is usually measured by a decrease in the amount of hemoglobin present, the red oxygen-transporting pigment in blood cells. There are many different types of anemia, each with unique causes and symptoms. Hemolytic anemia, megaloblastic anemia, and pernicious anemia are examples of various types. Some potential causes are blood loss, nutritional deficiencies, diseases, reactions to medication, and various problems with the bone marrow. Women with heavy menstrual periods typically experience iron deficiency anemia and other risk factors include pregnancy, older age, and diseases that cause anemia.

Indication	Company	Product	Phase
Anemia	<b>Affymax Inc</b>	Hematide	II
	<b>FibroGen Inc</b>	FG-4592	II
	<b>FibroGen Inc</b>	YM311 / FG-2216	II
Anemia with Chronic Kidney Disease	<b>Affymax Inc</b>	Hematide	III
Anemia with Cancer	<b>Affymax Inc</b>	Hematide	M

## Dyslipidemia

Dyslipidemia refers to a disruption of the amount of lipids (fats) in the blood due to a disorder of lipoprotein metabolism. In western societies, this is usually due to an increased concentration of lipids and hyperlipidemia due to diet and lifestyle. Dyslipidemias are detected by elevated levels of cholesterol and lipoproteins in the blood. Diabetes is often associated with this disease.

Indication	Company	Product	Phase
Dyslipidemia	<b>Quark Pharmaceuticals Inc</b>	QC-BT16	II

## Hemophilia

Hemophilia is a bleeding illness in which it takes a long time for blood to clot and abnormal bleeding occurs. Hemophilia A is due to a deficiency in the blood clotting factor VIII. Symptoms include excessive bleeding and are usually diagnosed during infant circumcision. Hemophilia B is a hereditary blood coagulation disorder caused by a deficiency of the blood plasma protein called factor IX that affects the clotting property of blood. Males are generally affected by this disorder.

Indication	Company	Product	Phase
Hemophilia	<b>Bayer Ag</b>	Kogenate	M
	<b>Bayer HealthCare</b>	Kogenate FS	M

## Hemorrhage

A hemorrhage is bleeding or the abnormal flow of blood. The patient may have an internal hemorrhage that is invisible or an external hemorrhage that

is visible on the outside of the body. Bleeding into the spleen or liver is internal hemorrhage. Bleeding from a cut on the body is an external hemorrhage. Stopping a hemorrhage is key to surgery and injuries.

Company	Product	Phase	Indication
Bayer HealthCare	Trasylol (aprotinin)	M	Hemorrhage

## Hypertriglyceridemia

Triglycerides are a type of fat found in the blood. They are a major source of energy and the most common type of fat in the body. When eating, the body uses the calories it needs for quick energy. Any extra calories are turned into triglycerides and stored in fat cells to be used later. Hypertriglyceridemia increases the risk for heart disease as well as for diabetes and stroke.

Company	Product	Phase	Indication
Next Pharmaceuticals Inc	Citri-Z	M	Hypertriglyceridemia

## Hypovolemia

Hypovolemia is a condition in which there is a significant decrease in the volume of blood plasma in the body. It can be caused by dehydration, bleeding, severe burns, and drugs such as diuretics or others used to treat hypertensive individuals. Sometimes, it occurs due to blood donation. The low volume of blood can lead to multiple organ failure, damage of the kidneys or brain, and eventually, total death.

Company	Product	Phase	Indication
BioTime Inc	PentaLyte	II	Hypovolemia
BioTime Inc	Hextend	M	

## Kidney Disease

The kidneys perform a very important life-sustaining role. They cleanse the blood by removing waste and excess fluids, maintain a healthful balance of various body chemicals, and help regulate blood pressure. When the kidneys become diseased or damaged, they can suddenly or gradually lose their ability to perform these vital functions. Waste products and excess fluid then build up inside the body, causing a variety of symptoms, particularly swelling of the hands and feet, shortness of breath, and a frequent urge to urinate. If left untreated, diseased kidneys may eventually stop functioning. Loss of kidney function is a very serious and potentially fatal condition.

Company	Product	Phase	Indication
Radiant Medical Inc	Relieve Endovascular Temperature Therapy System	III	Kidney Disease
Genentech Inc	TNKase (tenecteplase)	III	Kidney Failure and Dialysis
Acologix Inc	TRK-820	III	Uremic Pruritus

## Liver Failure

Liver failure occurs when large parts of the liver become damaged beyond repair and the liver is no longer able to function. Liver failure is a life-threatening condition that demands urgent medical care. Most often liver failure occurs gradually and over many years. However, a more rare condition known as acute liver failure occurs rapidly (in as little as 48 hours) and can be difficult to detect initially.

Indication	Company	Product	Phase
Acute Liver Failure	<b>Atlas Pharmaceuticals Inc</b>	APS-1010 / Hepapoeitin	II
Liver Diseases (General)	<b>BIO-VED Pharmaceuticals Inc</b>	Periban	M

## Myelodysplastic Syndrome


The myelodysplastic syndromes (MDS) are a group of disorders characterized by one or more peripheral blood cytopenias secondary to bone marrow dysfunction. The syndromes may arise de novo, or secondarily after treatment with chemotherapy and/or radiation therapy for other diseases. Secondary myelodysplasia usually has a poorer prognosis than does de novo myelodysplasia. Symptoms include anemia, neutropenia (low white blood cell count), and thrombocytopenia (low platelet count).

Indication	Company	Product	Phase
Idiopathic Thrombocytopenic Purpura	<b>Rigel Pharmaceuticals Inc</b>	R406 / R788	II
Myelodysplastic Syndrome	<b>Telik Inc</b>	Telintra	II
	<b>Telik Inc</b>	Telintra Tablet	II
	<b>SuperGen Inc</b>	Dacogen / NSC 127716 / DAC / dezocitidine (decitabine)	M
Thrombocythemia	<b>Impax Laboratories Inc</b>	Anagrelide Hydrochloride Capsules	M
Thrombocytopenia	<b>Bayer HealthCare</b>	Refludan Injection [lepirudin rDNA]	M

## Sickle Cell Anemia

Sickle cell anemia is a genetic blood disorder in which the body makes abnormally shaped red blood cells. These deformed blood cells are shaped like a crescent and do not move easily through blood cells, often getting stuck and blocking the flow of blood to organs and limbs, leading to low blood count, organ damage, and pain. Individuals are born with the disease and learn to live with it throughout their lives. Current treatments seek to improve blood flow.

Indication	Company	Product	Phase
Sickle Cell Anemia	<b>Angiogenix Inc</b>	Angx3227	II
	<b>Anthera Pharmaceuticals Inc</b>	A-001 (varespladib)	II
	<b>BioMarin Pharmaceutical Inc</b>	6R-BH4 (sapropterin dihydrochloride)	II
	<b>SuperGen Inc</b>	Dacogen / NSC 127716 / DAC / dezocitidine (decitabine)	II



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