

INSTITUTE: National Cancer Institute

STUDY NUMBER: 09-C-0025 PRINCIPAL INVESTIGATOR: Robert J. Kreitman, M.D.

STUDY TITLE: Phase II Trial of LMB-2, Fludarabine and Cyclophosphamide for Adult T-Cell Leukemia

Continuing Review Approved by the IRB on 01/19/21

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Standard

**INTRODUCTION**

We invite you to take part in a research study at the National Institutes of Health (NIH).

First, we want you to know that:

Taking part in NIH research is entirely voluntary.

You may choose not to take part, or you may withdraw from the study at any time. In either case, you will not lose any benefits to which you are otherwise entitled. However, to receive care at the NIH, you must be taking part in a study or be under evaluation for study participation.

You may receive no benefit from taking part. The research may give us knowledge that may help people in the future.

Second, some people have personal, religious or ethical beliefs that may limit the kinds of medical or research treatments they would want to receive (such as blood transfusions). If you have such beliefs, please discuss them with your NIH doctors or research team before you agree to the study.

Now we will describe this research study. Before you decide to take part, please take as much time as you need to ask any questions and discuss this study with anyone at NIH, or with family, friends or your personal physician or other health professional.

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**Description of Research Study**

This is a clinical trial for the treatment of adult T-Cell leukemia with an experimental drug called LMB-2 after the combination of the chemotherapy drugs fludarabine and cyclophosphamide (FC). The 2 drugs in addition to LMB-2 are abbreviated FC. You will be treated with FC on days 1, 2, and day 3 for each of 7 cycles. The beginning of the 2<sup>nd</sup> cycle is about 2 weeks after first, and after that the cycles are about 3 weeks apart. Starting with the 2<sup>nd</sup> cycle, on the last day of FC (day 3), you will be treated with LMB-2 every other day for 3 doses. After this 2<sup>nd</sup> cycle, you can be retreated with FC/LMB-2 a maximum of 5 more times provided certain requirements are met. LMB-2 is a recombinant immunotoxin that has been shown to kill leukemia and lymphoma cancer cells that have a protein on their surface called "CD25". To be eligible for treatment on this study, your malignant cells must have CD25 on their surface. However, the presence of CD25 on your malignant cells does not guarantee that you will be enrolled on the protocol. We plan to include at most 37 patients on this trial.

LMB-2 is an experimental drug called a recombinant immunotoxin. Each LMB-2 molecule is made up of two parts: a protein part that binds or targets a cancer cell and a toxin (a type of poison) part that goes inside and kills the cancer cell. The binding part is part of an antibody that binds to human CD25, a protein on your leukemia or lymphoma cells. The toxin portion of LMB-2 is naturally produced by bacteria. In laboratory experiments using leukemia or lymphoma cells outside the body, LMB-2 kills cells which have CD25 on their surface. LMB-2 also causes a significant decrease in the size of tumors in mice that were given doses similar to those used in the first human trial of LMB-2.

A preliminary study of LMB-2 has been performed at the National Cancer Institute (NCI) in which 39 patients with various leukemias and lymphomas were treated. In that trial, patients with hairy cell leukemia (4 patients), cutaneous T cell lymphoma (1), adult T-cell leukemia/lymphoma (1), Hodgkin's disease (1) and chronic lymphocytic leukemia (1) had reduction in their tumors.

**LMB-2 Treatment**

LMB-2 will only be given to patients at the NIH Clinical Center. Each cycle of LMB-2 is given by an intravenous (into a vein) infusion every other day for 3 doses. You will receive up to 6 cycles of LMB-2 every 3 weeks unless you develop worsening of disease, serious side effects, or voluntarily withdraw.

A small amount of blood (up to 10 teaspoons) will be drawn before, during, and after treatment. These blood tests allow us to measure how much LMB-2 is in your blood, the effects of LMB-2

on your cancer cells in your blood and monitor for side effects. We will also do blood tests prior to each cycle and during each cycle to know how your immune system is interacting with LMB-2.

Before each cycle and in follow-up visits you will undergo repeat disease evaluation. This will include a careful physical examination, blood and urine tests, and tumor-measuring scans like computed tomography (CT) scan. If these studies help us understand how your leukemia or lymphoma is reacting to FC chemotherapy and LMB-2, we may ask for your permission to repeat these tests again prior to other cycles.

The infusion of LMB-2 takes 30 minutes. You will also receive a liter (about 8 cups) of fluid through an IV or central venous catheter before and after each dose of LMB-2. A central venous catheter (CVC) is a plastic IV tube that is placed in a large vein that leads to the heart. You may already have a CVC in place. If not, depending on the size of your arm veins, one may need to be placed prior to treatment. A CVC makes treatment on this study easier and less painful by decreasing the need for IVs and needle sticks to draw blood. If a CVC is required or requested, you will be asked to review another consent form and give consent prior to its placement.

You will receive LMB-2 as an inpatient (admitted to the hospital) or as an outpatient (not admitted to the hospital). If the infusions are well tolerated, you may return home after about 1 week (possibly longer if complications occur). After returning home, you will have blood tests done weekly and the results will be faxed to us by your local physician. During the course of this study, you may also require other treatments such as transfusions and antibiotics. Hospitalization may be needed if complications develop. If there is evidence that therapy with LMB-2 is no longer effective, it will be discontinued.

**Fludarabine and cyclophosphamide chemotherapy**

One goal of the fludarabine and cyclophosphamide (FC) chemotherapy (FC) is to prevent neutralizing antibodies (antibodies your body makes which inactivate LMB-2) from forming once you receive LMB-2. Since LMB-2 contains a bacterial toxin, your body may make antibodies to it which will eliminate the ability of LMB-2 to bind to malignant cells and kill them. Experience in patients suggests but does not prove that FC may decrease the risk that you would make neutralizing antibodies to LMB-2. Another goal for the FC is to help the LMB-2 work better by first making the tumor smaller. Because the FC and LMB-2 are given so close together, it may be impossible to determine whether the LMB-2 is helping as well. However,

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during the trial we will be determining whether you respond well and make antibodies to LMB-2, and also other measures of your immunity. FC chemotherapy will be administered intravenously, daily for 3 days (days 1-3). It is possible that FC may harm your immune system without preventing neutralizing antibodies to LMB-2. The FC chemotherapy could cause problems because of a decreased number of neutrophils, which are a type of infection-fighting white blood cell. If you have fever and low neutrophils, you may need to take filgrastim (G-CSF) then and on future cycles where FC is given. G-CSF is given by an injection under the skin starting on day 5 and continuing until the absolute neutrophil count has exceeded 5000, or 1 day prior to the next cycle. The LMB-2 will begin on the 3<sup>rd</sup> day of the FC chemotherapy and will be repeated every other day for a total of 3 doses. Blood will be drawn prior to each cycle of LMB-2 to determine if the level of neutralizing antibodies is too high to give additional LMB-2. If it is too high, further LMB-2 will not be given. Because the result may not be known before the next cycle, you may receive one cycle of LMB-2 in the presence of antibodies. If you don't make antibodies and your disease is stable or decreasing with FC and LMB-2, you may continue to receive FC and LMB-2 for up to a total of 6 cycles each beginning 3 weeks apart.

**Risks or Discomforts of Participation**

Administration of FC and LMB-2 will be through a central venous catheter (CVC) or a peripheral I.V. The CVC is inserted by experienced staff using local anesthesia. The risks associated with the procedure include pain, bleeding, infection, and development of air in the chest. However, these complications are rare. Air in the chest outside the lung may require temporary placement of a chest tube by a surgeon. The risks of chest tube placement include pain, bleeding, and infection. Other risks of the catheter include infection and clotting of your veins, which could require removal of the catheter for treatment. These risks will be explained to you in more detail at the time of insertion. When a peripheral line is used, there is a small risk of infection, clot or bleeding at the site of the IV line. There is also a risk of some of the drug leaking out, also called extravasating. If that occurs there may be some destruction of skin tissue in a limited area. Patients are urged to alert the study physicians at the first sign of any skin changes, for example redness or tenderness, around the infusion site but also with any discomfort in the involved extremity as well. If there is any evidence of toxicity from leaking, the infusion will be held until a central line can be placed for the infusion of drug. In addition, any toxic effects to the skin will be treated to the fullest extent possible.

**LMB-2:**

There is limited experience with LMB-2 in humans. In the Phase I trial, a total of 39 patients received 65 cycles of LMB-2. On that trial, all side effects of LMB-2 went away when LMB-2 was stopped. In some cases this required additional medical treatments. Possible side effects of LMB-2 are summarized below:

**Possible:**

- Bloating, diarrhea
- Anemia which may require blood transfusions
- Pain
- Dizziness, headache
- Swelling of the body
- Fluid in the body which may cause low blood pressure, shortness of breath, swelling of ankles
- Abnormal heartbeat
- Decrease in heart's ability to pump blood during the "active" phase of the heartbeat (systole)
- Diarrhea
- Nausea or the urge to vomit
- Vomiting
- Swelling of the extremities (arms and/or legs)
- Fatigue or tiredness
- Fever
- Abnormal reaction of the body to substances, called allergens, that are contacted through the skin, inhaled into the lungs, swallowed, or injected (allergic reaction)
- Bruising, bleeding
- Increased blood level of a liver enzyme (ALT/SGPT)
- Increased blood level of a liver or bone enzyme (alkaline phosphatase)
- Increased blood level of a liver enzyme (AST/SGOT)
- Increased blood level of enzyme (creatine phosphokinase) from muscle
- Increased blood level of creatinine (a substance normally eliminated by the kidneys into the urine)
- Decreased number of a type of blood cell that help to clot blood (platelet)
- Weight gain, loss of appetite
- Decreased levels of a blood protein called albumin
- Muscle pain

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- Blood in the urine
- More protein in the urine than usual, often a sign of kidney disease
- Shortness of breath
- Increase in the number and size of the pores in the capillaries (small blood vessels) which causes leakage of fluid from the blood to the tissue spaces, resulting in dangerously low blood pressure, swelling and multiple organ failure
- Heart failure which may cause shortness of breath, swelling of ankles, and tiredness
- Low blood pressure which may cause feeling faint

A common side effect of immunotoxin drugs similar to LMB-2 is vascular leak syndrome, where fluid leaks out of blood vessels into the skin, lungs, and other organs. The symptoms may include swelling, weight gain, loss of blood pressure, shortness of breath. This can be severe, and although vascular leak syndrome usually gets better, it may require intubation and can be fatal. Patients may have protein leak into the urine. Other side effects associated with immunotoxins include edema (swelling), aches and pains of the muscles, joints, and/or bones, headache, fatigue, dizziness, blurred vision, lowering of normal blood cells including the red cells (with risk of anemia), white cells (with risk of infection), and platelets (with risk of bleeding), abnormal blood clotting tests and risk of bleeding, muscle damage, diarrhea, constipation, stomach or intestinal ulcers, stomach pain, indigestion, dehydration, kidney damage, abnormal blood salt levels, fluid leak in the lungs with shortness of breath, inflammation of the pancreas gland (the organ involved in diabetes), chills, decreased function of the thyroid gland, and neurologic problems including sleepiness, decreased level of alertness, weakness, painful tingling (“pins and needles”), numbness (decreased feeling), and coma. It is not known whether LMB-2 poses a risk to the developing fetus and breast-fed infants. All patients with childbearing potential, both male and female, must agree to use effective measures of contraception while on study. Patients that are pregnant or breast-feeding will be excluded from this trial because the effect of LMB-2 on a developing fetus or a nursing infant is unknown and potentially harmful. Whether you are a male or female, you should practice contraception for at least one month after receiving the last dose of LMB-2 or chemotherapy on this trial.

A condition known as hemolytic uremic syndrome (HUS) has been seen with related immunotoxin drugs although not with LMB-2. HUS is a potentially fatal problem that can cause fever, anemia (low red blood cell count), thrombocytopenia (low platelet count), bleeding, stroke, and kidney failure. Treatment of severe HUS includes a procedure known as plasma exchange or plasmapheresis, where the liquid portion of the blood (plasma) is removed from the body and replaced with plasma from blood donors using a special machine. Even with treatment, HUS may lead to death or permanent kidney and/or brain damage. Adverse reactions associated with plasmapheresis are rare and are generally mild. They include pain and bruising

at the insertion site of the intravenous line, and a temporary decrease in the platelet count and/or red blood cell count. Fainting episodes related to needle insertion can occur, and skin tingling caused by low calcium levels can rarely occur. Interrupting the plasmapheresis procedure can reverse this latter reaction. During plasmapheresis, at least two nurses will be present, and a blood bank physician will be available in the clinic area where the procedure is performed.

LMB-2 and other similar drugs can cause allergic reactions that may range from mild to severe. Symptoms of allergic reactions may include hives (red rash with bumps, wheals, or welts), and other skin rashes, swelling, itching, fever, chills, low blood pressure, fast heart rate, wheezing, shortness of breath, and rarely, death. In an attempt to decrease the risk of such reactions, you will be given a number of additional medications ("Premedications") before and after each dose of LMB-2.

### Cyclophosphamide toxicity

- a. Nausea and vomiting - variable; can be improved with standard medications (e.g., lorazepam).
- b. Water retention – cyclophosphamide inside the body may turn into a drug which can hurt the kidney. This side effect can be counteracted by a diuretic called furosemide.
- c. Cardiomyopathy - cyclophosphamide may cause severe, sometimes fatal, heart damage. Patients may present with heart failure as late as 2 weeks after the last dose of cyclophosphamide. The clinical syndrome has been observed mainly in patients receiving a higher dose of cyclophosphamide (1200 mg/m<sup>2</sup>) used in transplant protocols.
- d. Hemorrhagic cystitis - this is a serious, potentially life-threatening complication to the bladder. Although unnoticeable blood in the urine is not uncommon at this dose level, clinically significant blood in the urine can usually be avoided by maintaining a high urine volume and frequently urinating. The patient is encouraged to drink plenty of fluids, at least 2 liters per day, while taking FC.
- e. Sterility
- f. Less common but serious complications include lung damage and new cancers. Less common but temporary toxicities include balding and skin rash.

### Fludarabine toxicity

Fludarabine toxicities include bone marrow damage with low blood counts, fever, nausea, vomiting, sores in the mouth, diarrhea, stomach bleeding, low appetite, swelling, skin rashes,

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muscle aches, headache, nervousness, hearing loss, temporary episodes of fatigue, destruction of red cells and platelets by the body's immune system, abnormal sensations, kidney damage, and lung damage. Severe fatal brain toxicity with loss of vision and progressive deterioration of mental status were seen almost exclusively after very high doses of fludarabine. This toxicity has only rarely been seen at the dosage of fludarabine used for this trial. Very rarely described complications include severe autoimmune disease and liver failure. Tumor lysis syndrome following fludarabine administration has been observed, especially in patients with advanced bulky tumors. The symptoms of tumor lysis syndrome include rapid reduction in tumor size, fever, low blood pressure, abnormal blood chemistry results, and decreased kidney function. Unusual infections seen in immunosuppressed people (protozoan, viral, fungal, and bacterial) have been observed after-fludarabine, especially in heavily pre-treated patients, and in patients receiving fludarabine combined with other agents.

Patients with lymphoma and leukemia often have low blood counts and require red blood cell and/or platelet transfusions, with associated risks including transfusion reactions and infections (such as HIV and hepatitis). Prior treatment may have weakened your immune system. It is possible that LMB-2 may also weaken your immune system. Infections that develop in individuals with cancer can be very serious. You should seek immediate medical attention for fever greater than or equal to 100 degrees or any signs of infection.

### **Toxicity of filgrastim (G-CSF)**

Filgrastim can cause skin rash, muscle and/or bone pain, an increase in any inflammatory conditions which you had before, like arthritis, enlarged spleen possibly causing a lowering of the platelet count, and abnormal blood chemistry levels. Loss of hair can occur with prolonged use.

### **Summary of severe toxicity of FC chemotherapy and antibody therapy:**

- Likely (50-75% of patients): Low neutrophils
- Less Likely (25-50% of patients): Low platelets
- Unlikely (10-25% of patients): Infections including pneumonia

### **Risks Associated with Routine Procedures:**

*Blood Drawing:* To monitor the effects of therapy frequent blood tests will be necessary. Up to a one unit (about 50 teaspoons) of blood, may be drawn every 4 weeks for research purposes while you are participating in the study. Every effort will be made to keep blood tests to a minimum. You will be monitored for anemia and given blood transfusions if needed. Side effects of blood

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draws include pain and bruising in the area where the needle was placed, lightheadedness, and rarely, fainting.

**Bone Marrow Tests:** If a bone marrow aspiration is done, your hipbone will be numbed with anesthesia, a small needle will be inserted into the hipbone, and about two tablespoons of bone marrow will be removed through the needle. This procedure usually causes only brief discomfort. Very rarely, infection or bleeding may occur at the needle site.

**Premedications:**

*Acetaminophen (Tylenol):* side effects are extremely unlikely. Regular use of acetaminophen can cause liver damage especially at high doses (more than 4000mg/day or 12 regular strength tablets per day). To minimize this possibility you should not take over-the-counter products containing acetaminophen during the time periods you are taking scheduled acetaminophen doses on this study.

*Ranitidine (Zantac):* possible side effects include tiredness, dizziness, headache, and diarrhea.

*Hydroxyzine (Atarax):* Possible side effects include sleepiness, dizziness, restlessness, and irritability.

Patients infected with HIV will be excluded from this trial because the effect of LMB-2 on HIV replication and/or the immune system is unknown and potentially harmful. Patients with hepatitis C surface antigen positivity are excluded from this trial because the effect of LMB-2 on hepatitis C and/or the immune system is unknown and potentially harmful.

We will carefully monitor you to detect any of these side effects; in addition, you will be taught about side effects, which you may experience and must report immediately. Although side effects of this treatment usually last for a short period of time and completely resolve, you may experience side effects that are permanent. Although not expected, death could occur from this experimental treatment. It is very important that you notify us as soon as possible if you experience any type of side effect so that you can be carefully examined. All precautions will be taken to prevent these side effects and you will be treated promptly (if treatment is required and possible) if they occur. Treatment on this study will require a significant amount of your time and may be stressful. Participating in this study may prevent you from being in other research studies in the future.

**Potential Benefits of Participation**

While we hope that LMB-2 treatment will be beneficial to you, you may not benefit from this treatment. LMB-2 treatment may cause improvement in your leukemia such as reduction in cancer-related symptoms. Your participation in this study may help us advance the understanding of the use of biologic agents in the treatment of leukemia and lymphoma.

**Alternative Approaches or Treatments**

You may decide now not to receive treatment in this protocol or you may choose at any point in time to stop the drug and withdraw from the protocol. In either case you would be returned to the care of your referring physician.

Because of the type and extent of your tumor, chemotherapy is felt to be more beneficial than surgery or radiation alone. Alternative approaches that could be used may include:

1. Other forms of treatment:
  - a. Additional chemotherapy drugs and chemotherapy drug combinations which might be of benefit for your disease.
  - b. Radiation treatment, which sometimes can control tumor growth in local areas such as lymph nodes, spleen and bones. However, this approach will not effectively treat disease that has spread beyond the areas that are irradiated.
  - c. Surgery, which can be used to remove tumor that is pressing on important body parts due to fast growth.
2. Other experimental agents that have not been conclusively demonstrated to be effective.
3. Getting no treatment.
4. Getting comfort care, also called palliative care. This type of care helps reduce pain, tiredness, appetite problems, and other problems caused by cancer. It does not treat the cancer directly, but instead tries to improve how you feel. Comfort care tries to keep you as active and comfortable as possible.

**Stopping Therapy**

Your doctor may decide to stop your therapy for the following reasons:

- if he/she believes that it is in your best interest
- if your disease comes back during treatment
- if you have side effects from the treatment that your doctor thinks are too severe
- if new information shows that another treatment would be better for you

In this case, you will be informed of the reason therapy is being stopped.

You can stop taking part in the study at any time. However, if you decide to stop taking part in the study, we would like you to talk to the study doctor and your regular doctor first.

If you decide at any time to withdraw your consent to participate in the trial, we will not collect any additional medical information about you. However, according to FDA guidelines, information collected on you up to that point may still be provided to NCI or designated representatives. If you withdraw your consent and leave the trial, any samples of yours that have been obtained for the study and stored at the NCI can be destroyed upon request. However, any samples and data generated from the samples that have already been distributed to other researchers or placed in the research databases **cannot** be recalled and destroyed.

**Research Subject’s Rights**

**What are the costs of taking part in this study?**

If you choose to take part in the study, the following will apply, in keeping with the NIH policy:

- You will receive study treatment at no charge to you. This may include surgery, medicines, laboratory testing, x-rays or scans done at the Clinical Center, National Institutes of Health (NIH), or arranged for you by the research team to be done outside the Clinical Center, NIH if the study related treatment is not available at the NIH.
- There are limited funds available to cover the cost of some tests and procedures performed outside the Clinical Center, NIH. You may have to pay for these costs if they are not covered by your insurance company.
- Medicines that are not part of the study treatment will not be provided or paid for by the Clinical Center, NIH.
- Once you have completed taking part in the study, medical care will no longer be provided by the Clinical Center, NIH.

**Will your medical information be kept private?**

We will do our best to make sure that the personal information in your medical record will be kept private. However, we cannot guarantee total privacy. Organizations that may look at and/or copy your medical records for research, quality assurance, and data analysis include:

- The National Cancer Institute (NCI) and other government agencies, like the Food and Drug Administration (FDA), which are involved in keeping research safe for people.

- National Cancer Institute Institutional Review Board

A description of this clinical trial will be available on <http://www.Clinicaltrials.gov>, as required by U.S. Law. This Web site will not include information that can identify you. At most the Web site will include a summary of the results. You can search this Web site at any time.

### **Certificate of Confidentiality**

To help us protect your privacy, we have obtained a Certificate of Confidentiality. The researchers can use this Certificate to legally refuse to disclose information that may identify you in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings, for example, if there is a court subpoena. The researchers will use the Certificate to resist any demands for information that would identify you, except as explained below.

You should also know that there are several circumstances in which the Certificate does not provide coverage. These include when information:

- will be used for auditing or program evaluation internally by the NIH; or
- must be disclosed to meet the legal requirements of the federal Food and Drug Administration (FDA).
- is necessary for your medical treatment and you have consented to this disclosure;
- is for other research.

In addition, identifiable, sensitive information protected by this Certificate cannot be admissible as evidence or used for any purpose in any action, suit, or proceeding without your consent.

You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers will not use the Certificate to withhold that information.

### **What Happens After This Treatment is Completed?**

This depends on how you have responded to the experimental therapy. If you do not have evidence that the disease is worsening, we will schedule periodic visits to the Clinical Center for follow-up examination and tests. If the disease worsens then you may need other therapy. At that time you will be given the opportunity of participating in additional research protocols that may be appropriate for you. If no such protocols are available, you will be returned to the care of your local physician. It is important to stress that participation in this protocol does not constitute a promise of long-term medical care here at the Clinical Center. If there is no research

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study that is suitable for you and your stage of disease, you will be returned to the care of your private doctor or to a clinic in your local community. It is conceivable that participation in this study may make you ineligible to participate in certain other research protocols because the requirements for entry onto these protocols may disallow patients who have already been treated with certain drugs or who have had certain side effects from previous treatment. You may decide now not to receive treatment on this protocol, or you may choose at any point in time to stop the treatment and withdraw from the protocol; in either case you will be returned to the care of your referring physician.

**Conflict of Interest:**

The National Institutes of Health (NIH) reviews NIH staff researchers at least yearly for conflicts of interest. This process is detailed in a Protocol Review Guide. You may ask your research team for a copy of the Protocol Review Guide or for more information. Members of the research team who do not work for NIH are expected to follow these guidelines but they do not need to report their personal finances to the NIH.

Members of the research team working on this study may have up to \$15,000 of stock in the companies that make products used in this study. This is allowed under federal rules and is not a conflict of interest.

The National Institutes of Health and the research team for this study have developed a drug, being used in this study. This means it is possible that the results of this study could lead to payments to NIH scientists and to the NIH. By law, government scientists are required to receive such payments for their inventions. You will not receive any money from the development of LMB-2.

**Use of Specimens and Data for Future Research**

To advance science, it is helpful for researchers to share information they get from studying human samples. They do this by putting it into one or more scientific databases, where it is stored along with information from other studies. A researcher who wants to study the information must apply to the database and be approved. Researchers use specimens and data stored in scientific databases to advance science and learn about health and disease.

We plan to keep some of your specimens and data that we collect and use them for future research and share them with other researchers. We will not contact you to ask about each of these future uses. These specimens and data will be stripped of identifiers such as name, address or account number, so that they may be used for future research on any topic and shared broadly for research purposes. Your specimens and data will be used for research purposes only and will not benefit you. It is also possible that the stored specimens and data may never be used.

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Results of research done on your specimens and data will not be available to you or your doctor. It might help people who have cancer and other diseases in the future.

If you do not want your stored specimens and data used for future research, please contact us in writing and let us know that you do not want us to use your specimens and/or data. Then any specimens that have not already been used or shared will be destroyed and your data will not be used for future research. However, it may not be possible to withdraw or delete materials or data once they have been shared with other researchers.

**Optional Studies (not required)**

- Soluble CD22, CD25, CD30, and other tumor markers: To estimate the amount of cancer cells in the body by measuring proteins which fall off cancer cells and go into the blood. Requires about 1 teaspoon. Soluble CD25 may also be measured in your tumors if they need to be removed as part of your medical care, or if tumors can be easily and safely removed like with a skin biopsy.
- Skin biopsy: To determine whether skin lesions have ATL cells, and if so, to determine the extent to which ATL cells are cleared with FC or FC/LMB2.
- HLA typing to better understand the immune system in patients getting LMB-2. HLA is the human leukocyte antigens, a complex of proteins on your white blood cells which allow your body to determine whether the cell is yours or not. Requires about 1 teaspoon.
- PAX-gene tube: To obtain RNA to study tumor markers, and an assay called micro-arrays, to study why some patients do not respond as well as others to LMB-2. PAX-gene tubes contain a special liquid that keeps RNA in the blood stable, and it mixes with your blood only after it is drawn. Requires about 1/2 teaspoon.
- DNA samples to look for abnormalities which might make a patient more susceptible to toxicity. The genes to look at would include those that trigger cells to die, and those that help make hormones which cause inflammation. Requires about 1/2 teaspoon.
- Assays to identify genes in your DNA which would have significant risk to you, including how likely you or your children might be to get cancer, will not be done.
- Samples to determine levels of LMB-2 in the blood, urine, and other tissues by activity or immuno (ELISA) assays.
- Flow cytometry assays to quantify tumor markers on the malignant cells. In flow cytometry, your blood after being drawn goes into a tiny tube where lasers determine whether the tumor markers are present if so how much. Requires about 1/2 tablespoon.
- Cytotoxicity assays. Leukemia or lymphoma cells from the blood, bone marrow, or other tissues may be tested with LMB-2 and related drugs to determine if the malignant cells can be killed outside the body. Requires 1-3 tablespoons.

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**OTHER PERTINENT INFORMATION**

**1. Confidentiality.** When results of an NIH research study are reported in medical journals or at scientific meetings, the people who take part are not named and identified. In most cases, the NIH will not release any information about your research involvement without your written permission. However, if you sign a release of information form, for example, for an insurance company, the NIH will give the insurance company information from your medical record. This information might affect (either favorably or unfavorably) the willingness of the insurance company to sell you insurance.

The Federal Privacy Act protects the confidentiality of your NIH medical records. However, you should know that the Act allows release of some information from your medical record without your permission, for example, if it is required by the Food and Drug Administration (FDA), members of Congress, law enforcement officials, or authorized hospital accreditation organizations.

**2. Policy Regarding Research-Related Injuries.** The Clinical Center will provide short-term medical care for any injury resulting from your participation in research here. In general, no long-term medical care or financial compensation for research-related injuries will be provided by the National Institutes of Health, the Clinical Center, or the Federal Government. However, you have the right to pursue legal remedy if you believe that your injury justifies such action.

**3. Payments.** The amount of payment to research volunteers is guided by the National Institutes of Health policies. In general, patients are not paid for taking part in research studies at the National Institutes of Health. Reimbursement of travel and subsistence will be offered consistent with NIH guidelines.

**4. Problems or Questions.** If you have any problems or questions about this study, or about your rights as a research participant, or about any research-related injury, contact the Principal Investigator, Robert Kreitman, M.D., Building 37 Room 5124B, Telephone: 301-480-6187. Other researchers you may call are: Wyndham Wilson, M.D., Ph.D., Building 10; Telephone: 240-760-6092. You can contact either one through the hospital page operator 301-496-1211. You may also call the Clinical Center Patient Representative at 301-496-2626. If you have any questions about the use of your specimens or data for future research studies, you may also contact the Office of the Clinical Director, Telephone: 240-760-6070.

**5. Consent Document.** Please keep a copy of this document in case you want to read it again.

**MEDICAL RECORD****CONSENT TO PARTICIPATE IN A CLINICAL RESEARCH STUDY**

- Adult Patient or
- Parent, for Minor Patient

STUDY NUMBER: 09-C-0025

CONTINUATION: page 16 of 16 pages

**COMPLETE APPROPRIATE ITEM(S) BELOW:****A. Adult Patient's Consent**

I have read the explanation about this study and have been given the opportunity to discuss it and to ask questions. I hereby consent to take part in this study.

\_\_\_\_\_  
Signature of Adult Patient/  
Legal Representative

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

**B. Parent's Permission for Minor Patient.**

I have read the explanation about this study and have been given the opportunity to discuss it and to ask questions. I hereby give permission for my child to take part in this study.

(Attach NIH 2514-2, Minor's Assent, if applicable.)

\_\_\_\_\_  
Signature of Parent(s)/Guardian

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

**C. Child's Verbal Assent (If Applicable)**

The information in the above consent was described to my child and my child agrees to participate in the study.

\_\_\_\_\_  
Signature of Parent(s)/Guardian

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

**THIS CONSENT DOCUMENT HAS BEEN APPROVED FOR USE  
FROM JANUARY 19, 2021 THROUGH JANUARY 18, 2022.**

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Witness

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

PATIENT IDENTIFICATION

**CONSENT TO PARTICIPATE IN A CLINICAL RESEARCH STUDY (Continuation Sheet)**

- Adult Patient or
- Parent, for Minor Patient

NIH-2514-1 (07-09)

P.A.: 09-25-0099

File in Section 4: Protocol Consent