

## Mycobacterium leprae (OLD VERSION)

Leprosy, also called Hansen's disease, is a disease caused by *Mycobacterium leprae* and mainly affects skin and nerves. *M. leprae* is transmitted through aerosols, taken up in the body by alveolar macrophages, and disseminates hematogenously. However, *M. leprae* can only replicate in cool temperatures leaving the cool tissues of skin and extremities vulnerable. *M. leprae* causes two extremely different patterns of disease depending on the patient's immune response. The less severe form is called tuberculoid leprosy. Patients present with dry scaly lesions on the skin that lack sensation. Because of an adequate TH1 response with release of IL-2 and IFN – gamma, the bacilli is relatively contained. Parallel to tuberculosis, this cell-mediated immunity can be reflected by delayed type hypersensitivity reaction to a dermal injection of bacterial extract called lepromin. Tuberculoid leprosy can be treated with dapsone and rifampin. The 2<sup>nd</sup> form of disease is called lepromatous leprosy and is characterized by a weak TH2 response with an inability to control the bacteria. Patients present with symmetric skin thickening and nodules on the face called leonine facies. There is a widespread invasion of mycobacteria into Schwann cells causing damage to the peripheral nervous system. Treatment for this form includes dapsone and rifampin with the addition of clofazimine.



PLAY PICMONIC

### Aerobic

#### Aerobic Outfit

*Mycobacterium leprae* is an aerobic bacteria, which can only survive and flourish in an oxygenated environment.

### Acid Fast

#### Acidic-lemon Running Fast

The mycolic acid in the cell wall makes mycobacterium acid fast, which means they will retain stains despite wash with acid.

### Likes Cool Temperature

#### Ice blocks

This bacteria proliferates best in cool temperatures ranging from 32 to 34 degrees C. Therefore, the bacteria affects mostly cooler tissues including the skin and extremities.

### Tuberculoid leprosy

#### Tube Leopard

This is the less severe form of leprosy seen in patients with adequate TH1 response. Patients present with dry scaly lesions that lack sensation.

### Granulomatous response

#### Granny Llama

Because the TH1 response is adequate in tuberculoid leprosy with release of IL-2 and IFN, there is a granulomatous inflammation in response to the bacilli.

### Positive Lepromin Skin Test

#### Positive skin suit

In tuberculoid leprosy, patients will respond with a positive lepromin skin test in response to a dermal injection of bacterial extract called lepromin, parallel to tuberculosis.

## **Dapsone**

[Diaper-sun](#)

A drug used in the treatment of leprosy. It can also be used as second-line treatment for prophylaxis against pneumocystis pneumonia. Long term oral dapsone use can be associated with hemolysis and methemoglobinemia.

## **Rifampin**

[Ref Amp](#)

Drug used in treatment of leprosy and tuberculosis.

## **Lepromatous leprosy**

[Leper Leopard](#)

Lepromatous leprosy is the more severe form of leprosy that occurs in the immunocompromised.

## **Weak Immune System**

[Weak leopard](#)

Patients with lepromatous leprosy have weakened immune response with poor TH1 response.

## **Leonine facies**

[Lion face](#)

Characteristic facial appearance with persons with lepromatous leprosy where the face resembles that of a lion with loss of eyebrows, nasal collapse and lumpy earlobes.

## **Negative Lepromin Skin Test**

[Negative skin suit](#)

Patients with lepromatous leprosy will have negative lepromin skin test due to inadequate immune response.

## **Clofazimine**

[Clover fez](#)

Clofazimine can be added to dapsone and rifampin for treatment for lepromatous leprosy.