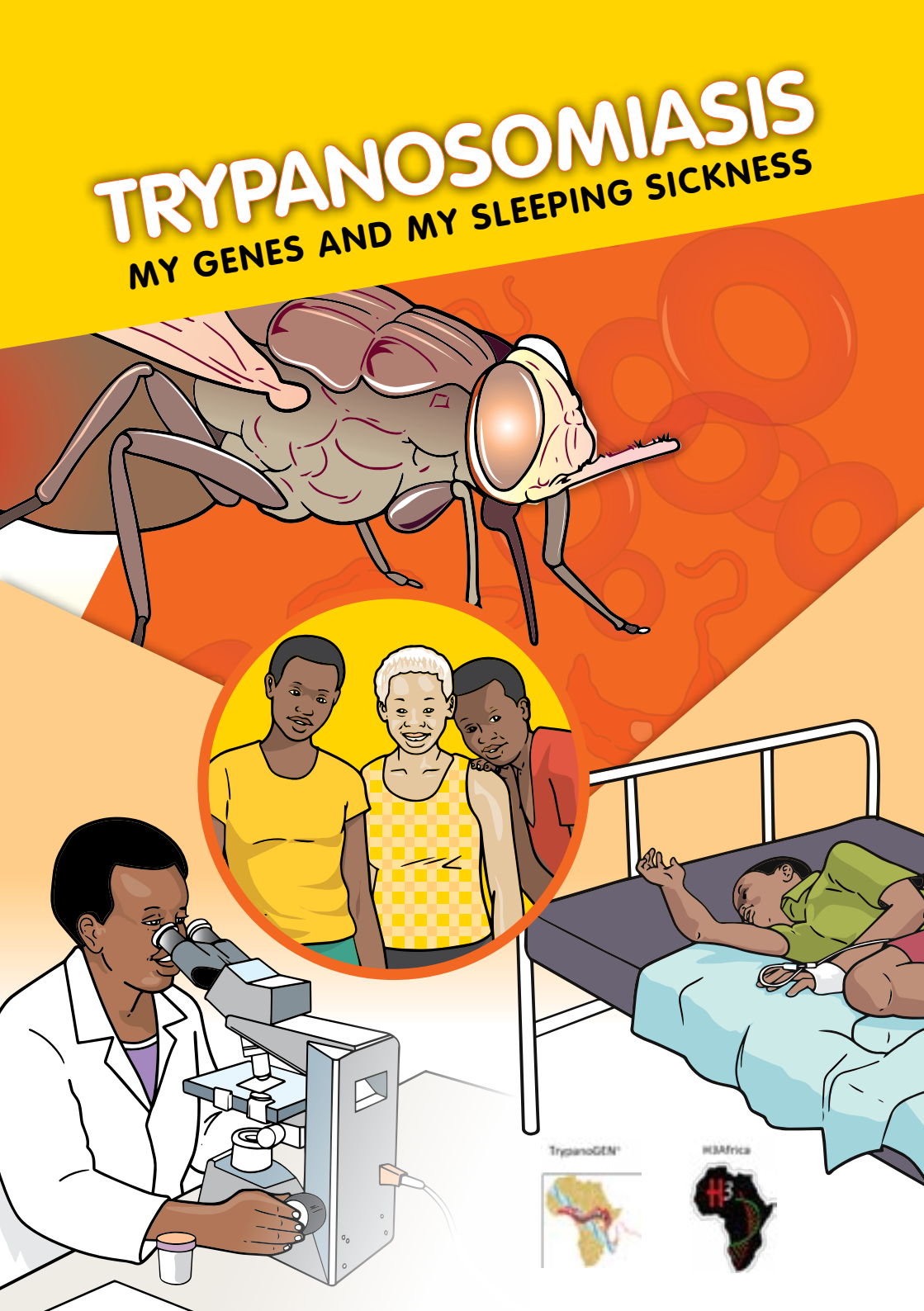
TRYPANOSOMIASIS

MY GENES AND MY SLEEPING SICKNESS



TrypanoGEN+

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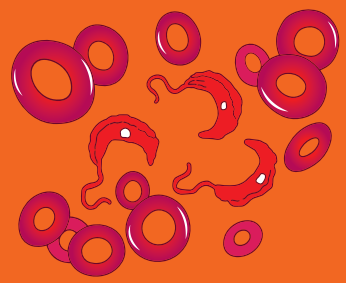
wellcome

TRYPANOSOMIASIS: MY GENES AND MY SLEEPING SICKNESS IS A © OF TrypanoGEN+, Vincent P. Alibu and Enock Matovu, 2020.

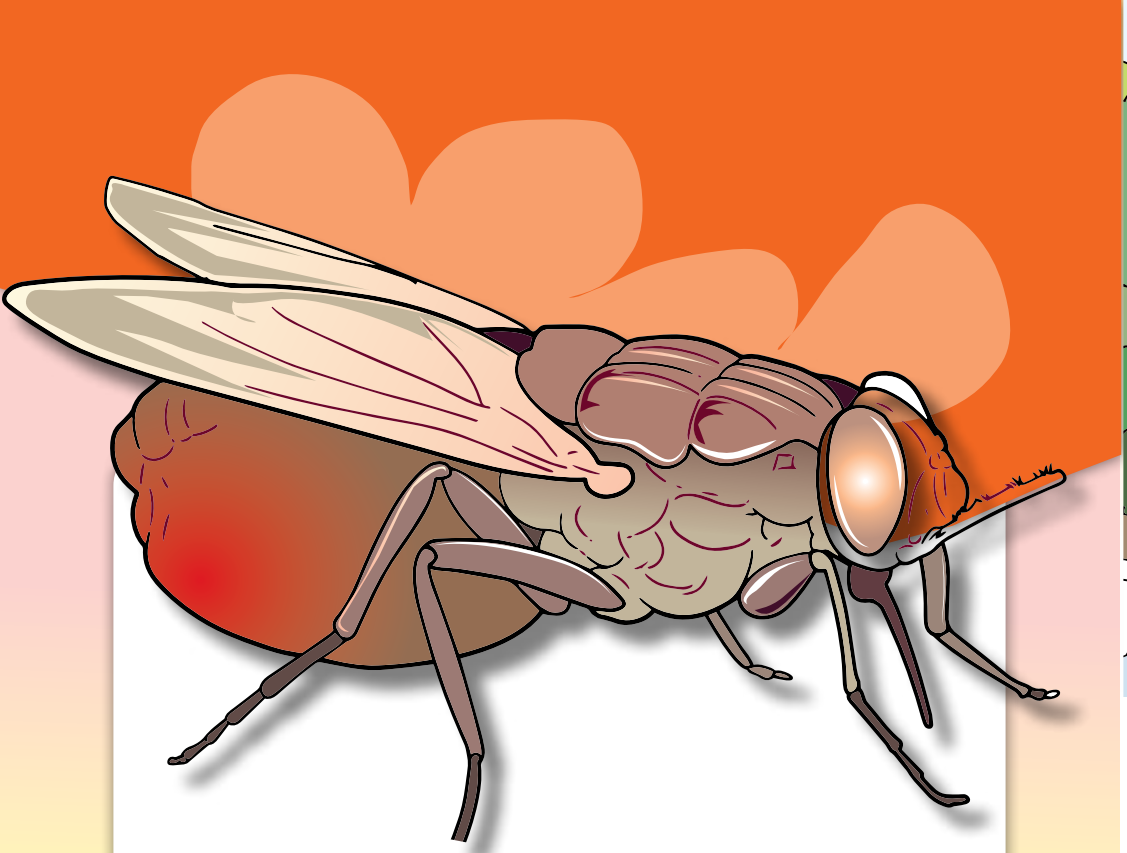
A COMIC WRITTEN BY VINCENT P. ALIBU AND ENOCK MATOVU. ILLUSTRATED BY Andrew BAINGANA

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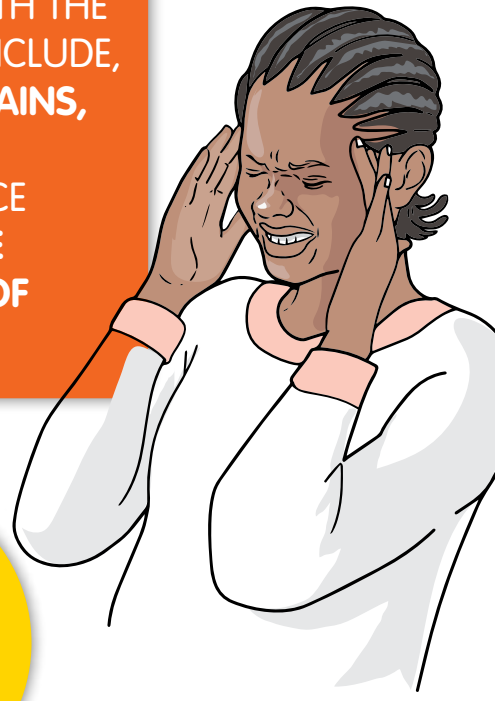
SLEEPING SICKNESS OR **TRYPANOSOMIASIS** IS CAUSED BY A PARASITE CALLED A **TRYPANOSOME** SWIMMING IN YOUR BLOOD AND BRAIN



TRYPANOSOMIASIS AFFECTS BOTH **ANIMALS** AND **HUMANS.** IT IS TRANSMITTED BY **AN INFECTED TSETSE FLY.** THE TSETSE FLY LIVES ON YOUR BLOOD. THE TSETSE FLY MAY FIND YOU **GRAZING ANIMALS IN THE BUSH, GARDENING, FETCHING WATER FROM A VILLAGE WELL OR EVEN AT HOME.**



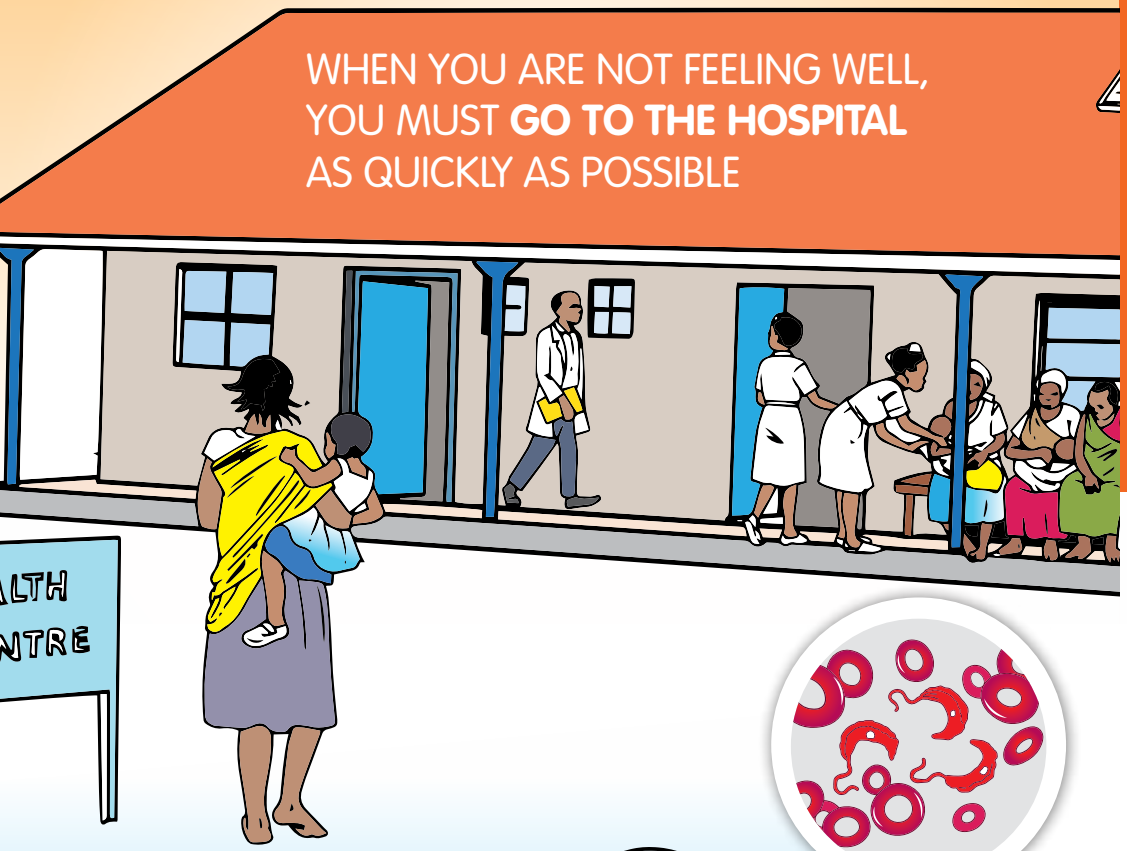
ONCE YOU ARE INFECTED WITH THE PARASITE, THE SYMPTOMS INCLUDE, **HEADACHE, FEVER, JOINT PAINS, WEAKNESS AND ITCHING.** MUCH LATER YOU EXPERIENCE **CONFUSION, DISTURBANCE IN SLEEP CYCLE** AND **LOSS OF WEIGHT.**



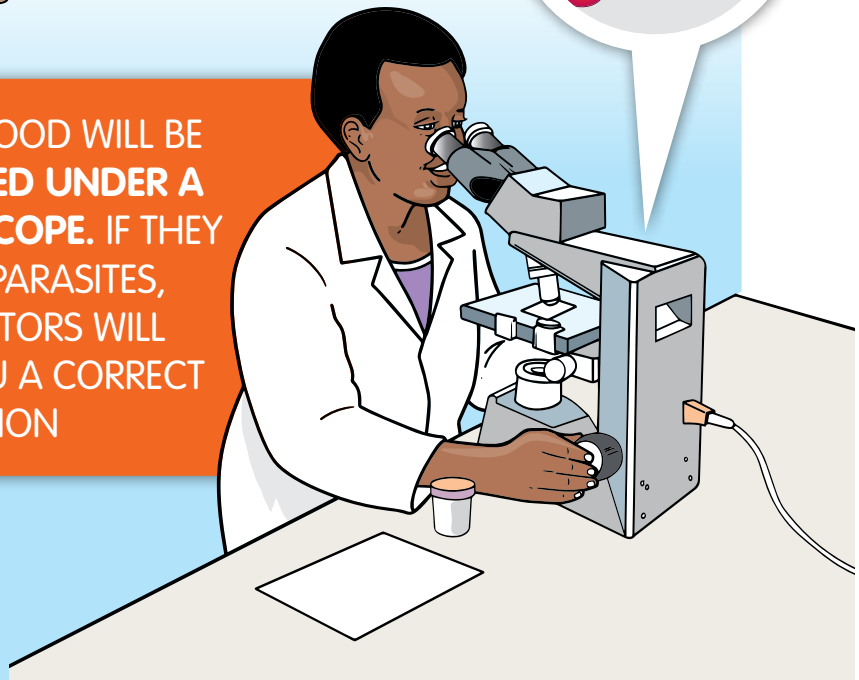


MOST PEOPLE DIE IF NOT TREATED. BUT SOME MAY LIVE WITH THE PARASITE WITH NO DISEASE.

WHEN YOU ARE NOT FEELING WELL, YOU MUST **GO TO THE HOSPITAL** AS QUICKLY AS POSSIBLE



YOUR BLOOD WILL BE **EXAMINED UNDER A MICROSCOPE.** IF THEY SEE THE PARASITES, THE DOCTORS WILL GIVE YOU A CORRECT MEDICATION

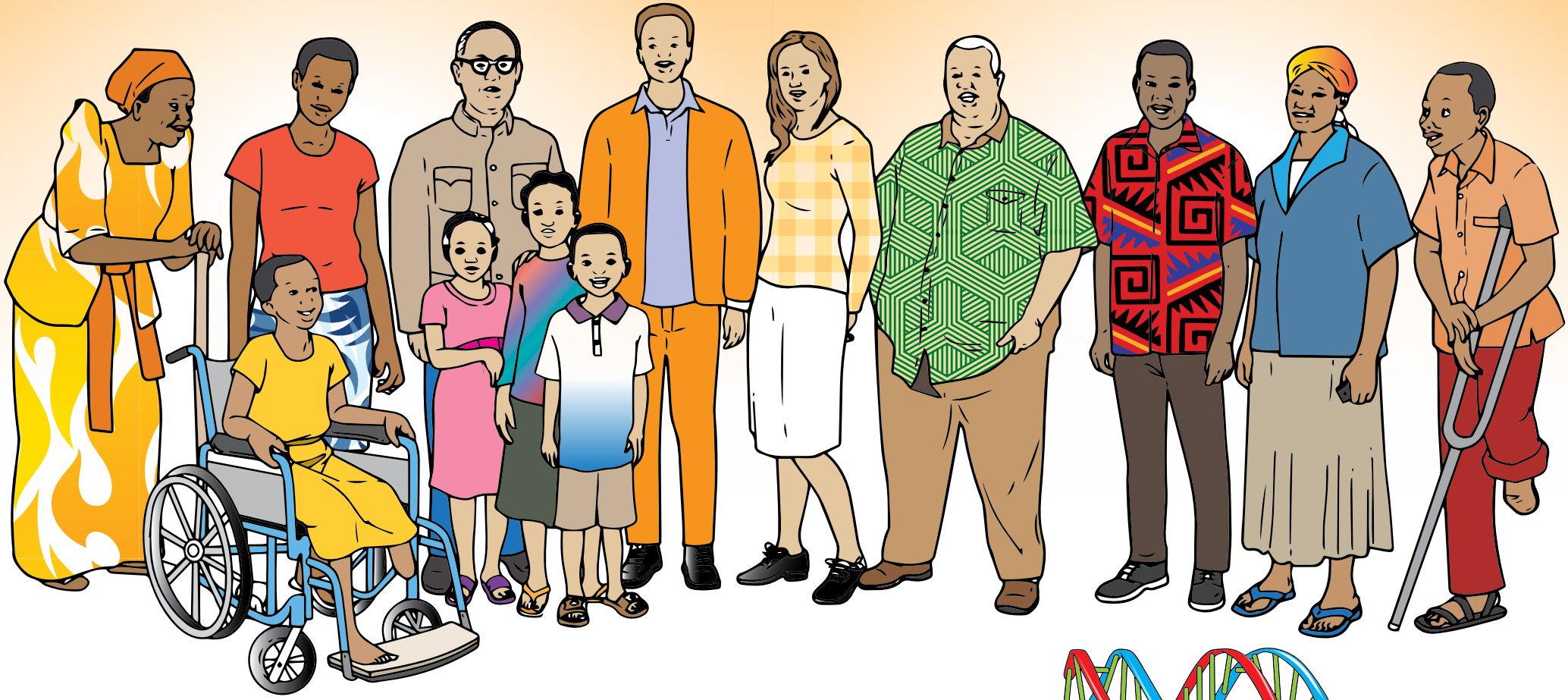




DRUG DISCOVERY	ANIMAL TRIALS	CLINICAL TRIALS	COMMERCIALISATION
> Genomic Target Identification > Target Validation > Compound Screening	> Minimise side effects > Maximise Efficacy > Diagnosis > Safety & Toxicity Studies		> Candidate Drug Approval > Marketing (Pharmaceuticals)
YEARS: 3-5	1-2	4-6	1-2 (Approval)

FIVE DIFFERENT DRUGS ARE IN USE FOR THE TREATMENT OF SLEEPING SICKNESS. THESE DRUGS ARE DONATED TO THE WORLD HEALTH ORGANISATION BY MANUFACTURERS AND USED **TO TREAT SICK PEOPLE FREE OF CHARGE.** SCIENTISTS ARE DEVELOPING NEW DRUGS SINCE THE CURRENT DRUGS ARE TOXIC.

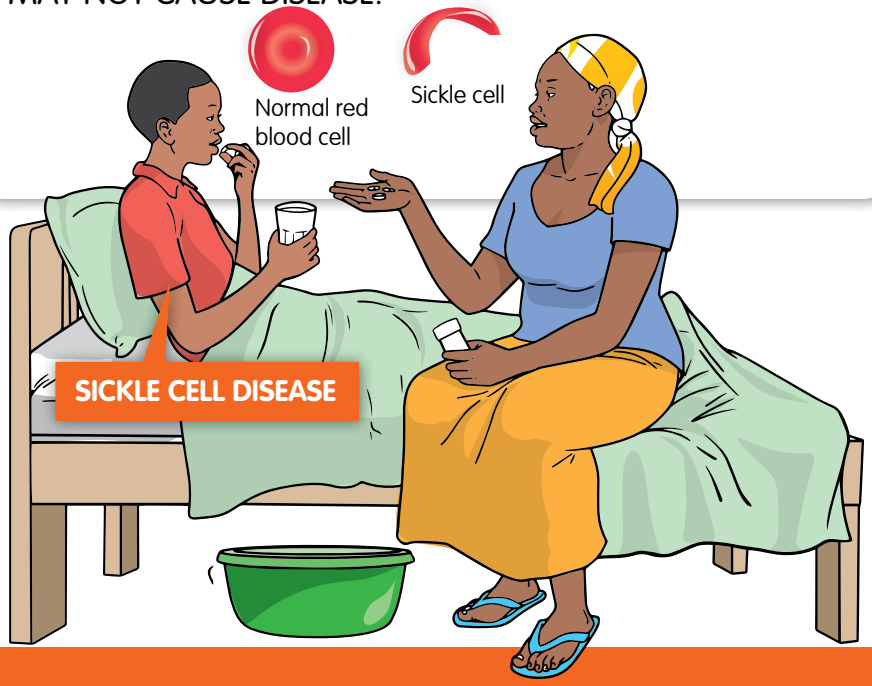
THE FEW DRUGS IN USE ARE TOXIC. DRUG DEVELOPMENT PROCESS TAKES YEARS AND IS COSTLY



EVERY INDIVIDUAL PERSON HAS **DNA** PASSED ON AT CONCEPTION FROM THE **MOTHER AND THE FATHER.** THIS GIVES EVERY INDIVIDUAL UNIQUE INHERITED CHARACTERISTICS CALLED **TRAITS**. THIS DNA MIXING MAKES US DIFFERENT FROM EACH OTHER

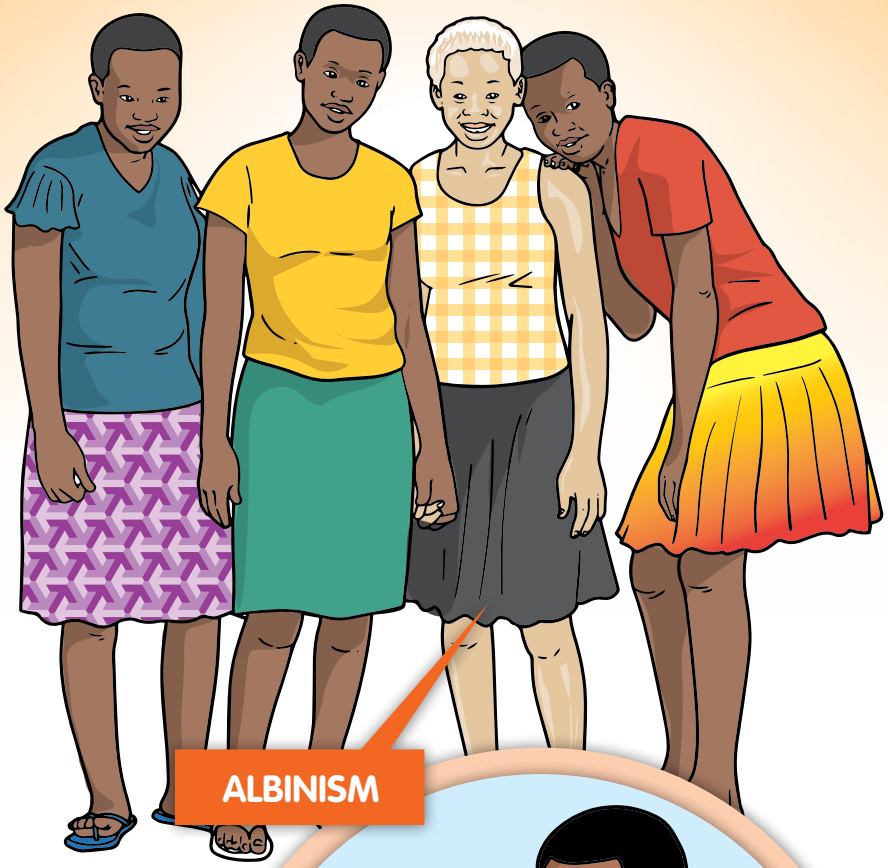
A PERSON'S GENETIC INFORMATION IS CALLED THE **GENETIC CODE OR GENOME.** GENETICS INFLUENCES HOW THESE INHERITED TRAITS ARE DIFFERENT OR VARY FROM PERSON TO PERSON. THESE TRAITS INCLUDE HEIGHT, EYE COLOUR, FACE SHAPE, SKIN COLOUR AND OTHERS.

EVERY HUMAN AILMENT HAS SOME BASIS IN THE GENES. SCIENTISTS HAVE BEEN ABLE TO **LINK GENETICS** WITH BIRTH DEFECTS AND SOME DISEASES LIKE **SICKLE CELL ANAEMIA OR CONDITIONS LIKE ALBINISM.** THESE HAVE SIMPLE **INHERITANCE PATTERNS** BECAUSE EACH IS CAUSED BY **A CHANGE IN A SINGLE GENE.** THESE CHANGED GENES ARE CALLED **"DEFECTIVE GENES".** SOME GENES CHANGE BUT MAY NOT CAUSE DISEASE.





A SINGLE CHANGE IN A GENE





INFECTIOUS DISEASE RISK IS ALSO ASSOCIATED WITH **GENETIC SUSCEPTIBILITY.** THIS INCLUDES DISEASES LIKE TB, MALARIA AND OTHERS CAUSED BY BACTERIA, PARASITES OR VIRUSES. **GENETIC SUSCEPTIBILITY** OR **PREDISPOSITION** IS AN **INCREASED LIKELYHOOD** OF **DEVELOPING** A PARTICULAR **DISEASE** BASED ON A PERSON'S **GENETIC MAKEUP.** THIS RESULTS FROM SPECIFIC **GENETIC VARIATIONS** OR **GENETIC DIFFERENCES** THAT ARE OFTEN **INHERITED** FROM A PARENT.

IF ALL CHILDREN GOT INFECTED BY THE PARASITE, THEY REACT DIFFERENTLY TO INFECTION, ...



CHILD 1: MAY NOT FALL SICK



CHILD 2: MAY FALL SICK MILDLY BUT RECOVERS BYSELF OR ON MINOR TREATMENT





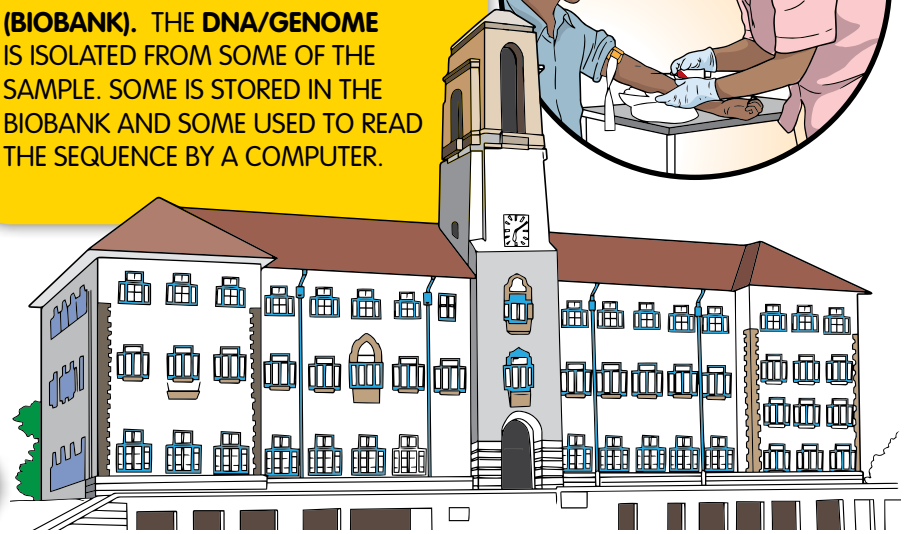
CHILD 3: MAY FALL VERY SICK AND NEED URGENT MEDICAL ATTENTION OTHERWISE, MAY DIE

THE **SCIENTISTS TAKE SOME SAMPLE** (BLOOD, SALIVA OR URINE) **ONLY** FROM **COMMUNITY MEMBERS** WHO **FREELY ACCEPT/CONSENT** TO PARTICIPATE IN THE RESEARCH.

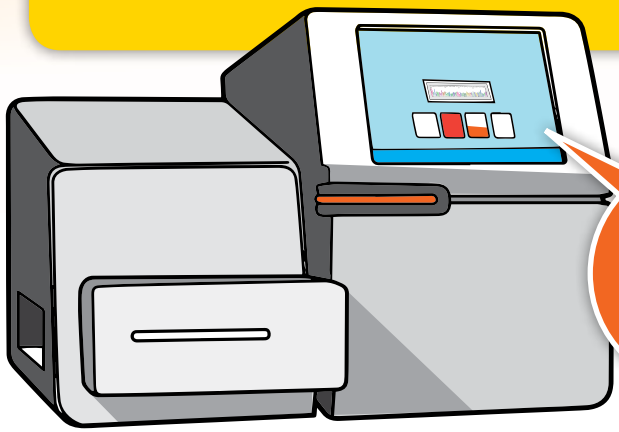




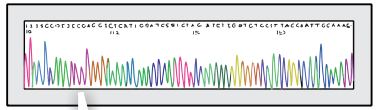
THE SAMPLE IS TRANSFERED FROZEN TO THE LABORATORIES AT THE UNIVERSITY AND STORED IN FREEZERS **(BIOBANK).** THE **DNA/GENOME** IS ISOLATED FROM SOME OF THE SAMPLE. SOME IS STORED IN THE BIOBANK AND SOME USED TO READ THE SEQUENCE BY A COMPUTER.



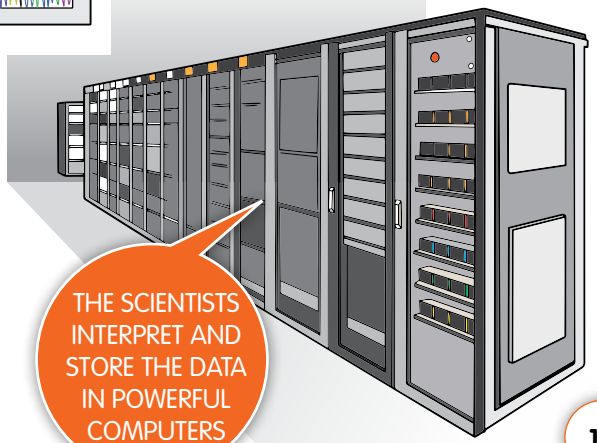
WE ARE USING **ADVANCED COMPUTER** TECHNOLOGY TO FIND THE **DIFFERENCES IN GENOMES** OF THOUSANDS OF PEOPLE IN AFFECTED AREAS IN AFRICA. THIS WILL HELP US BEGIN TO UNDERSTAND THE **GENETIC DIFFERENCES** AMONG THE PEOPLE AND HOW THEY **REACT TO INFECTION**



A COMPUTER READS YOUR DNA



THE RESULTS/ DATA IS SENT TO THE SCIENTISTS

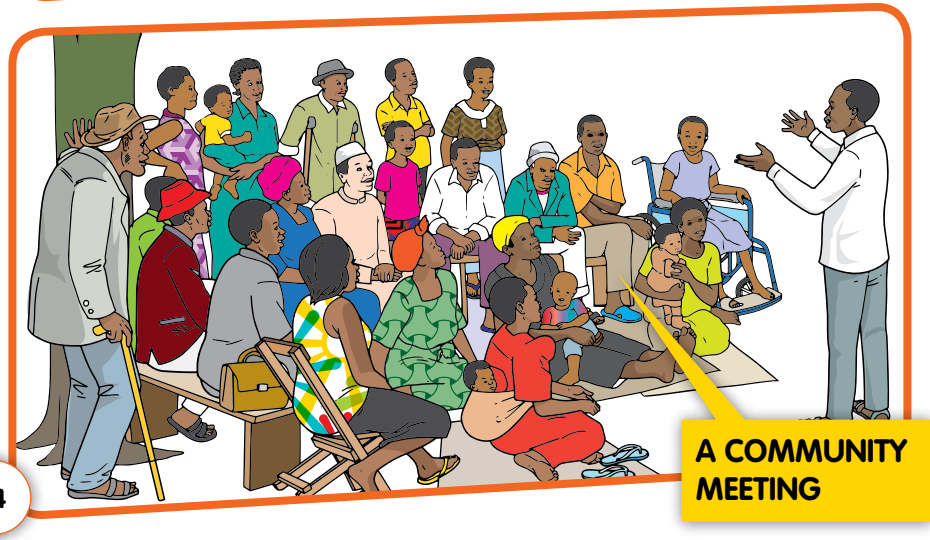


THE SCIENTISTS INTERPRET AND STORE THE DATA IN POWERFUL COMPUTERS

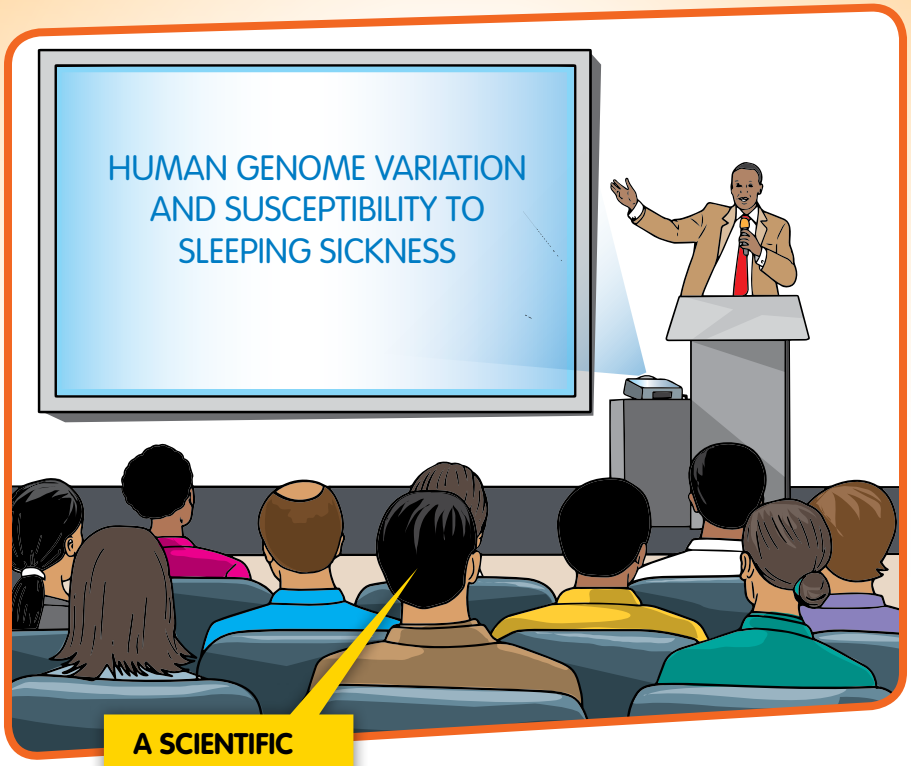
SIMPLIFIED RESULTS WILL BE SHARED WITH **INDIVIDUAL SAMPLE DONORS** OR **WHOLE COMMUNITIES UPON CONSENT.** THE RESULTS (DATA) ARE ALSO SHARED BETWEEN **SCIENTISTS, POLICY MAKERS, AND COMMERCIAL COMPANIES BASED ON AGREED RULES.**



ONE-TO-ONE



A COMMUNITY MEETING



A SCIENTIFIC CONFERENCE

THERE ARE THREE POSSIBLE APPLICATIONS OF THESE RESULTS: DEVELOPMENT OF (1) **NEW AND BETTER DETECTION OF INFECTION**; (2) **NEW AND BETTER DRUGS** OR (3) **ADVISE TO THOSE GENETICALLY PREDISPOSED.**

TEST YOURSELF?

WHAT IS SLEEPING SICKNESS?

HOW DO YOU GET INFECTED WITH SLEEPING SICKNESS?

WHAT ARE THE RISK FACTORS FOR SLEEPING SICKNESS?

WHAT ARE THE SYMPTOMS OF SLEEPING SICKNESS?

WHAT SHOULD YOU DO WHEN YOU SUSPECT YOU HAVE SLEEPING SICKNESS?

WHO SHOULD GIVE YOU TREATMENT?

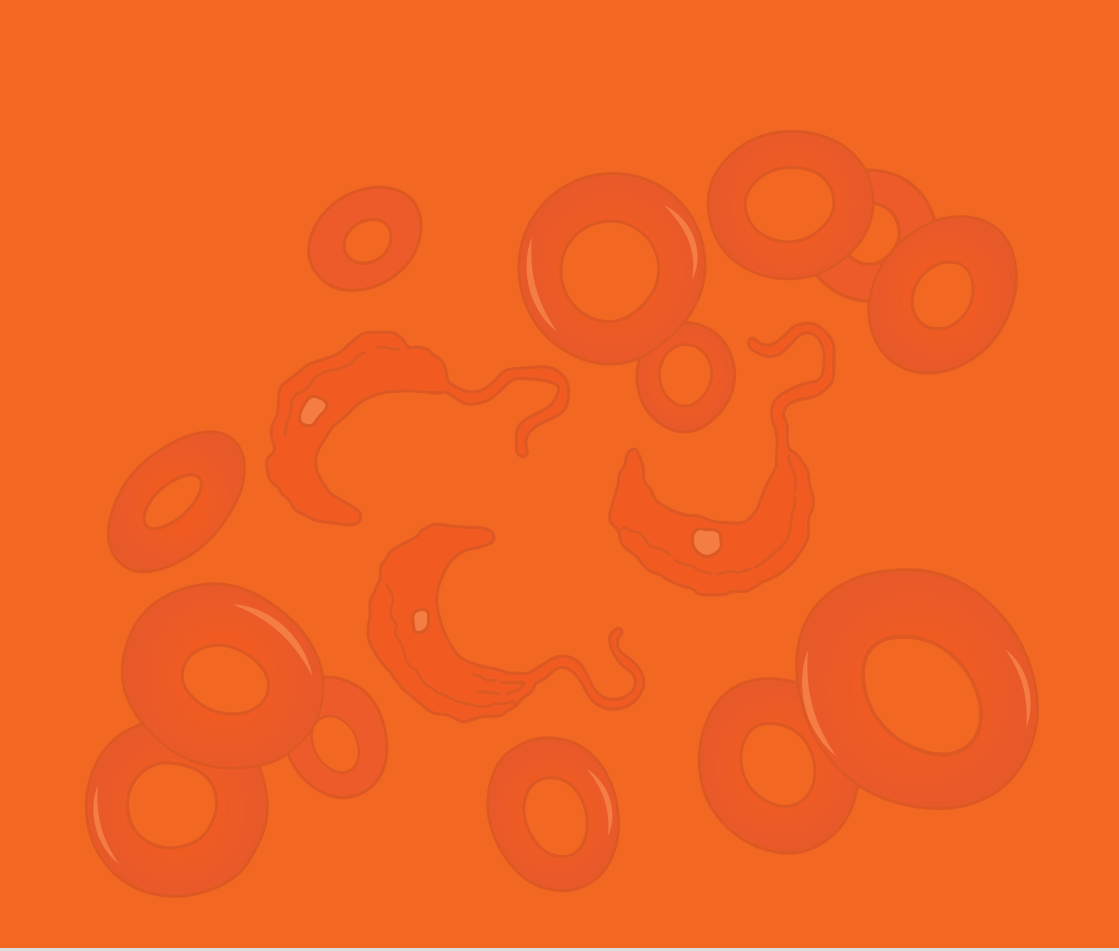
IS THERE A DIFFERENCE BETWEEN A RESEACHER AND A MEDICAL DOCTOR?

IS IT EASY TO DEVELOP NEW DIAGNOSTICS AND DRUGS?

TrypanoGEN+ IS A RESEARCH NETWORK IN THE H3AFRICA (H3A) CONSORTIUM. IT IS LED BY MAKERERE UNIVERSITY. OUR GOAL IS TO DETERMINE THE HUMAN GENETIC FACTORS THAT LEAD TO SUSCEPTIBILITY TO TWO DISEASES SO AS TO IMPROVE DISEASE MANAGEMENT: OUR WORK IS ON TRYPANOSOMIASIS (OR SLEEPING SICKNESS) AND SCHISTOSOMIASIS (OR BILHARZIA) AMONG AFFECTED COMMUNITIES. IN THIS BOOKLET WE DISCUSS SLEEPING SICKNESS.

WE THANK ALL OUR COLLABORATORS, FUNDERS AND THE COMMUNITIES WE WORK WITH

FOR MORE INFORMATION CONCERNING OUR WORK PLEASE VISIT
WWW.TrypanoGEN.net



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