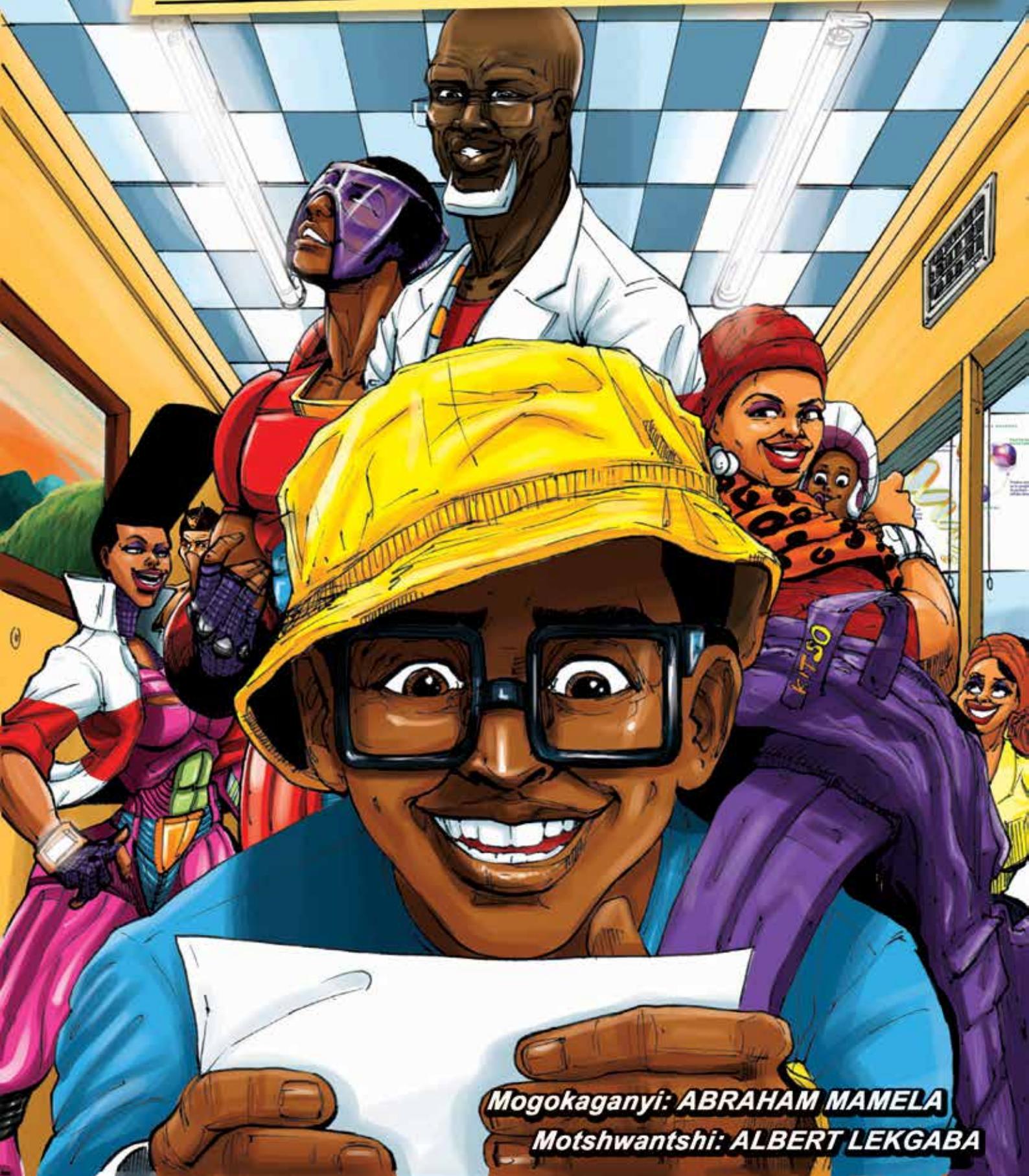


LEKWALO 4

GENOME ADVENTURES

TSHOLOFELO YA BOSASA:

KITSO O UPOLOLA DITLOTHLOMISO TSA MARANYANE A BOTSGOGO LE SEGOTSO



Mogokaganyi: ABRAHAM MAMELA

Motshwantshi: ALBERT LEKGABA

FOREWORD

The Ministry of Infrastructure, Science and Technology (MIST) has a mandate to provide and maintain building infrastructure, serve as a regulatory body for the use of nuclear technology and to coordinate Research, Science, Technology and Innovation. The key words science, research, technology and innovation define the core vision while consultation and collaboration with stakeholders are critical enablers of its mission. Broadly, MIST's stakeholders include artists and other players in the scientific arena.

The art industry plays a very crucial role in our society. Through art we can challenge our society's deepest assumptions, spark new ideas, inspire critical thought and vision and elicit new actions in society. Imaginations of future cities can come through the inspiration of artists. Through the use of cartoons and comics art can simplify and explain complex scientific concepts, demystify science and thus be a very powerful tool for communication. Therefore, we at MIST view art and artists as important collaborators and enablers of our vision and mission.

I am pleased to note that the Botswana-Baylor Children's Clinical Centre of Excellence (COE) is using art and comics to reach out, engage and educate the community on the complex topic of genes and how they relate to health and disease. In part fulfillment of the goals of the ongoing Collaborative African Genomics Network (CAfGEN) the COE has brought together a team of artists, cartoonists, scientists and journalists to develop a comic book series called Genome Adventures. Funded jointly by Wellcome Trust and the US National Institutes of Health, Genome Adventures is presented in four books. Those in the know will recall that in the first and second books, Kitso, the young hero of the series, with the assistance of several superheroes explored "Heredity and Genetics" and "Cracking the Code," respectively.

The current series of Genome Adventures consists of books three and four. In book three entitled "Decoding Disease" Kitso explores genes and health; and in the fourth entitled "Hope on the Horizon" he explores the intricacies of biomedical and genomics research. Through his amazing adventures Kitso travels the world, experiencing different cultures along the way as he learns about the link between health and genetics. As before, the books are presented in a pictorial and entertaining way using simple language and they can be enjoyed and understood by all. I understand the books will soon be translated into Setswana and several other African languages for greater reach. The Genome Adventures series clearly demonstrates that research and development offer great potential to solving societal problems; and further that even difficult scientific concepts can be communicated to all using comics. At MIST we salute all those involved in creating Genome Adventures. I wholeheartedly endorse this pioneering effort and urge those concerned to consider turning the books into a digital format.



Nonofo E. Molefhi
Minister for Infrastructure, Science and Technology

In and Skills Development

KITSO

DR. MABOKO

KGOSIGADI



DUMELANG! LEINA LA ME KE KITSOI KE NNA KO TLOKWENG LE MMANGWANEI KE TSHOTSWE KA MOGARE WA HIV, MME GA O NKORELETSE KA SEPE!

PHODISO

KE BIDIWA PHODISO, MME LE KA MPITSA "MMAGWANE". KE SALE KE TSAYA KITSO GO NNA LE NNA MORAGO GA GO TLHOKAFALA GA GA MMAAGWE EBILE KE MO RATA JAAKA KE RATA BONGWANAKE BA BANGWE. RE NNA MMOGO MO TLOKWENG. RE KA TSWA EBILE RE LE BAAGISANYE

KE MOETELEDIPELE WA SETDOPHA SA GENOME ADVENTURES (GO SA KGATHALESEGE GORE KGOSIGADI O GO RAA A RENG). KE NA LE BOKGONI KE NA LE MAATLA A GO RALALA MABOTA LE BOKGONI JWA GO ETELA DINAKO TSE DI FITILENG KA SEKUTA SAME. EBILE GA SE GONE GOTLHE, KE KGONA LE GO BALA DIKAKANYO TSA BATHO.

DUMELANG, BAGAETSHOI KE MOTHYO YO O BUANG EBILE KE MOETELEDIPELE WAS BATHO BAME BA BATSWANA KE KA TSWA KE LEBEGA JAAKA MMEMOGOLO WA GAGO MME FELA THOBANE YA ME E NA LE MAATLA A FAPHEGILENG GO TSWENG KO BADIMONG BA ME! KA ONE MAATLA ONE A, KE KGONA GO LAOLA SEEMO SA LOAPI, KE LAOLA DIPHOLOGOLO LE GO DIRA DILO TSE DINGWE TSE DI GAKGAMATSANG.



XGAO-TCGAI

LEINA LAME KE XGAO-TCGAI (BALE BANTSİ BA MPITSA XT). KE MOTLOTLO GO BO KE LE MONNA WA MOSARWA - RE ITSIWE THAT KA LEINA LA BASARWA KGOTSA BUSHMEN. LE NNA KE MOGALE (SUPERHERO) WA NAKO-MAATLA A GO TSAMAYA. LEINA LA ME LE RAA TEBO E BOGALE KA GORE TEBO YA ME E BOGALE JWA THIPA GAPE KE KGONA GO BONA ISAGO!



MARANYANE

EITAI FELA JAAKA LEINA LAME LE BUA KE BIDIWA MARANYANE, KE RATA MARANYANE THATAI...BONA FELA JAAKA MMELE WAME O NTSEI KE MOCHINE GAPE KE MOTHO. KE BOTLHATE THATA EBILE KE RATA GO DIRISA MARANYANE A SESHA A MARATA GOLEJWAI



MMATLI

LEINA LA ME KE MMATLI. KE MMATLISISI WA TSA MARANYANE, EBILE LE NNA KE NA LE BOKGONI JWA GO NGOTLA DILO LE BATHO DI NNA DINNYE MO O KA SEKANG WA DI BONA KA MATLHO A GAGO. KE RATA DILO TSE DI KGATLHISANG TSE BORANYANE BO RE THUSANG GO DI ITHUTA GAPE NKA RATA GO BONA BANA BA BASETSANA BA NNA BAITSEANAPE BA BORANYANE HELA JAAKA NNA.





NTSHALE MORAGO

BRRRR.. KGOSIGADI,
GO UTLWALA ELE
MARIKA MO TENG MO.
A RE DIRISE MAATLA A
GAGO GO THUTHUFATSA.

HUH? LEINA LAME KE
MMA KALAFI. KE MOOKI GAPE
KE TLILE GO GO TLHALOSETSA
KA GO KOPA TETLA, PELE A RE
TLHATLHOBE GO ITAYA GA
PELO, GO HEMA, MOGOTE
LE GO TSAMAYA GA MADI.

?

KE TLA TSHUBA
SETHUTHUFATSI.



SWISHHH!!



O BONE SEO
MMANGWANE?

EE, LETSATSI LE
DULE,
A LETSATSI LE
LENTE.

NNYAA MMANGWANE,
KGOSIGADI O DIRILE
MASELAMOSE A GAGWE.



KITSO LEO GA SE LEINA
LA ME. A RE SIMOLOLE,
RE KA SIMOLOLA.

KE TLILE GO GO TSAYA SEEMO
SA KGATELELO YA MADI,

GO ITAYA GA PELO YA GAGO

LE MOGOTE,
LE GO GO KALA.



SENGWE LE SENGWE SE LEBEGA SE SIAME.
JAANONG A RE BUE KA DIPATLISISO.
TLA KE SIMOLOLE KE RE O KA TSWA MO
DIPATLISISONG TSE NAKO NINGWE LE NNGWE.
KITSO, A O ITSE GORE DIPATLISISO TSE KE
TSA GA ENG?

GO THUSA LEFATSHE
GO ITHUTA KA FA
MOGARE WA HIV LE
KGOTLHOLO E TONA
DI ITSAYANG KA TENG.

O NEPILE KITSO.

DIPATLISISO DI LEBELELA DNA LE
RNA TSA GAGO LE TSA BANA BA
BANGWE. O GAKOLOGELWA KA FA O
NENG O SA TSENA MO KALAFING GO
FITLHELELA O NNA LE DINGWAGA
DI LE LESOME?



RE BITSA BALWETSI
BA ELE BALWETSI BA BA
LWALANG MO NAKONG
E KHUTSHWANE.



RE BATLA GO TSHWANTSHANYA
DNA YA GAGO LE YA BONE GO
BONA GORE A GO NA LE
DIPHAROLOGANYO TSE DI KA
THUSANG GO DIRA KALAFI
KANA MEKENTO MO ISAGONG.

OHI JAAKA DIPATLISISO
TSA GENOME -WIDE
ASSOCIATION?

WOW! SEO SE NNETE
KITSO! O ITSILE JANG?

RE BUILE KA SONE KO KGAOLONG
GHANZI, A O A GAKOLOGELWA?

OH KITSO, GA O ISE
O YE KO KGAOLONG
YA GHANTS!

LEGALE, A RE BUE KA GORE GO
TSENELELA DIPATLISISO GO RAYA
ENG MO GO WENA. DIKGWEDI
DINGWE LE DINGWE TSE BORATARO
O TLA NNA O TLA KOKELWANENG LE
GO TSEWA MADI.

FA O TSENELELA DIPATLISISO,
RE TLA TSAYA MADI A LE
MANNYE MO MALATSING AO.

OH, GO SENA GO TSEWA
MADI KGAPETSAKGAPETSA?

GAPE GO SENA GO TLA
KOKELWANENG
KGAPETSAKGAPETSA?



NNYAA, GO TLA A BO GO
SENA GO TSEWA MADI
GANTSİ GO NA LE JAAKA
O TSEWA MO GOMPIENO
GAPE GO TLA KOKELWANENG
O TLELA DIPATLISISO O TLA
A BO O TLA KA MALATSI A
GO TLA KOKELWANENG.

SEO SE SIAME
THATA.



JAANONG A RE BUE KA TETLA.
TETLA E RAYA O LETLELELA
SENGWE. MO KGETSING E, E
RAYA GORE O RE LETLA GO
DIRISA MADI A GAGO A MMELE
MO DIPATLISISONG TSA RONA.

GO BOTLHOKWA GO TLHALOGANYA
TSE DI LATELANG PELE FA O KA
FA TETLELELO: GORE GORENG RE
DIRA DIPATLISISO, GO TLA
DIRAGALA ENG MO
DIPATLISISONG, LE GORE KE
MANG YO O TLA A BONANG
MADUO A DIPATLISISO. JAANONG
A RE LEBELELE DILo TSEO...

KITSO KAROLO E E
BOTLHOKWA. A O NA
LE NNA?



EE MME KE...

HEELA XT..
KE RAYA
"XUKURI"

KE LEBOGELA
SENOTSIDIDI.

KITSO KA GORE O KO TLASE
GA DINGWAGA TSE DI MASOME
A MABEDI LE BONGWE,
MMANGWANEAGO LE ENE O
TLAMEGA GO BAYA LETLA
MONWANA.

KA GORENG? MMANGWANE
GA A TSEYE KAROLO MO
DIPATLISISONG.

KA GORE GA O MOGOLA
KITSO, MOGOLA O
TSHWANETSE GO RE FA
TETLELELO. LE WENA O
TLA RE FA TETLELELO
KITSO, KA GO BAYA
MONWANA TETLA YA
BANA.

JAANONG FA
MMANGWANE A KA
RE "NNYAA"NNA KE
RE "EE"?

POTSO E NTLE. RE TLHOKA
WENA LE MMANGWANEAGO GO
RE FA TETLELELO GORE O
KGONE GO TSAYA KAROLO MO
DIPATLISISONG. O AKANYA
JANG KITSO?

JAANONG MADI A ME A MMELE ONE?
KE A ITSE MO KOKELWANENG BA
TLHATLHOBA MASOLE A MMELE LE
PALO YA MOGARE, MME JAANONG LE
YA GO DIRA DITEKELETSO MO GO
ONE?! A BAITSEANAPE BA TSA
BORANYANE GA BA KA KE BA DIRA
MOTHO YO O TSHWANANG LE NNA?

NNYA KITSO, HAHAHA.
TLA KE GO TLHALOSETSE. MO
DIPATLISISO TSE RE DIRISA
TETLA E ATOLOGILENG. GO
RAYA GORE BAITSEANAPE BA
KA KGONA GO DIRISA MADI A
GAGO A MMELE- A RE TLILENG
GO A BOLOKA KO MANNONG A
BIDIWANG BIOBANK- GO
DIRISIKA KE DIPATLISISO TSA
BOTSGO MO ISAGONG.
GONGWE MO ISAGONG

BAITSEANAPE BA KA KGONA
GO DIRA MOKENTO WA
MOGARE WA HIV LE
KGOTLHOLO E TONA. GA GO
KGONAGALE JAANONG, MME
MADI A GAGO A MMELE A
TLA A BO A LE TENG FA BA
KA KGONA. JAANONG,
NNYAA, GA GO OPE YO O KA
DIRANG MOTHY YOO
TSHWANANG LE WENA.

A GONA LE KGONAGALO YA
GORE BAITSEANAPE BA MPHE
MAATLA A FETELETSENG A
TSHWANANG LE A GAGO?



NNYAA KITSO, RE KGATLHEGELA
GO DIRA BATHO GORE BA NNE LE
BOTSGO JO BO ITEKANETSENG.
GAPE ROTLHE RE A ITSE GORE
MAATLA A FETELETSENG GA A
BOAMMAARURI.

WARENG MMANGWANE?
KE YA GO BAYA MONWANA
KERE EEMO PAMPERING YA
TETLA YA BANA.

KE TLA BAYA TETLA
MONWANA FELA FA
DIPATLISISO DI
BABALESEGILE GAPE
DI LE BOTLHOKWA.



KE AKANYA GORE DIPATLISISO DI
BOTLHOKWA. GAPE KE TLHALOGANYA
DITSAMAIKO, SEPHIRI, GAPE LE GORE
KE MANGY O O TLA BONING MADUO.
KA SE, KE TLA BAYA MONWANA "EE".

DIPATLISISO DI BABALESEGILE
THATA MMA- GA RE KAKE RA DIRA
DIPE KO NTLE GA TSE DI
TLWAELESIGILENG KA NAKO YA FA
A TLILE KOKELWANENG, GAPE RE
TLAA TSAYA DIKGATO TSOTLHE GO
NETEFATSA FA SEPHIRI SA GA
KITSO SE BABABLESEGILE. MME GA
KE KAKE KA GO TSEELA TSHWETSO
YA GORE DIPATLISISO DI
BOTLHOKWA . O TSHWANETSE
GO TSAYA TSHWETSO EO KA
BO WENA.

!?



GO SIAME! JAANONG TLA KE
BITSE MOTHY YO O GO
TSAYANG MADI



DUMELA, LEINA LA ME KE
DR MOSENODI. KE NAKO
YA DITLHATLHOBO TSA
MMELE, KITSO

NNYAA, O DR MABOKO!
KE GO BONE O TSENA KA
GO RALALA LEBOTA.

AGH, WENA RRA.
A MAITLHOMO.

ZWING!



KE TLILE GO DIRISA
SEDIRISIWA STETHOSCOPE
GO REETSAA GO ITAYA GA PELO
LE MAKGWAFO A GAGO. A O
KILE WA GOTLHOLA MO
BOSHENG? BOTLHOKO JONE?



NNYAA, GAKOLOGELWA KE
ILE KA TILA SICKLE CELL
FA KE NNYEFADITSWE KE
LE MO TSHIKENG.

GA KE NA
KGOBALO EPE.



KE ENG SEO MOSIMANE
WA ME? LEGALE, SENGWE
LE SENGWE SE LEBEGA SE
SIAME. O ITEKANETSE
JAAKA KGOMO.

DUMELA KITSO! KE MMONI, MOTSEI
WA MADI A MMELE - KE LEINA LE LE
KGATLHISANG LA MOTHOKO YO O
TSAYANG MADI

A O NE O ITSE GORE RE TLHOKANA LE
MASWANA A TEE A LE MARARO A MADI
MO DIPATLISISONGI? A MANGWE KE A
TLHATLHOBO E TLWAELESEGILENG.

OH, KE NE KE ITHAYA
KERE SEO KE SE SE
DIRWANG KE DINWAMADI.



ISHHHH! A GA O KGONE GO
NNYEFATSA LEMAO KA
MAATLA A GAGO A
FETELETSENG?

OK KITSO, GA KE
IS EKE SIMOLOLE.

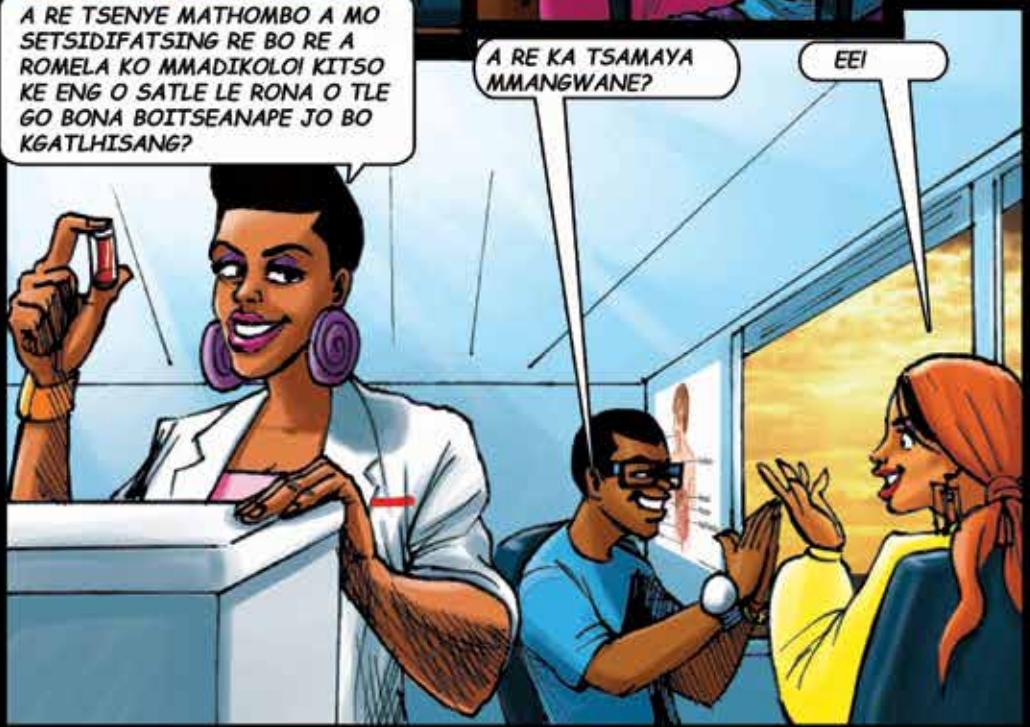
OH...



A RE TSENYE MATHOMBO A MO
SETSIDIFATSING RE BO RE A
ROMELA KO MMADIKOLOI KITSO
KE ENG O SATLE LE RONA O TLE
GO BONA BOITSEANAPE JO BO
KGATLHISANG?

A RE KA TSAMAYA
MMANGWANE?

EE!



KITSO, YOO KE MOITSEANAPE
WA RONA WA MO NTLONG YA
BORANYANE TSHEPO O TLA GO
BONTSHA LEFELA A BO A GO
BOLELELA GORE O DIRA ENG KA
MADI A GAGO. KE TSHWANETSE
GO BOELA KOKELWANENG.

AMOGELESEGILE
MO UM, KITSO!

MARANYANE, KAPARI
YA GAGO YA BAGALE
E KAE?

WA SIMOLOLA
GAPE...

KE RATA GO APARA BAKI
E TSHWEU MO NTLONG
YA BORANYANE.



LANTLHA RE BONE SA LETHOMBO LA GAGO GO TSAYA MAINA GO NNA LE MOTLHALA WA MADI A GAGO. RE BO RE THUTHUFATSA MADI A GAGO MO METSING.

JAANONG FA MADI A GAGO A SETSE A LE BOTHITHO RE YA GO A TSENYA MO SEDIRISIWENG SE SE BIDIWANG CENTRIFUGE GO TLHAOLA DIKAROLO TSE DI FAROLOGANYENG TSA MADI.

WHITE BLOOD CELLS DI KO GODIMO, AKERE?



O NEPILE KITSO. KE GONE KO RE TSAYANG DNA TENG. RE YA GO TSENYA DINGWE TSE DI TLHOKEGANG TSE DI BIDIWANG "REAGENTS" GO THUBA DIKAROLWANA TSE DI NNYE TSA SETSHEDI GO TLHAOLA DNA.

PELE GA RE KA TLHOMAGANYA, RE TSENYA DNA MO FLUROMETER GO NETEFATSA FA ELE MOTSWAKO O LEKANENG.

O DIRA SE O LE NOSI, MO MOLWETSING MONGWE LE MONGWE?

GO FETILE BOKGONI JWA MOTHQ, AKERE?



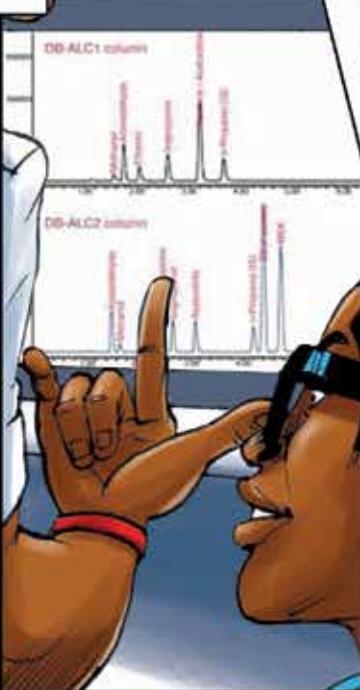
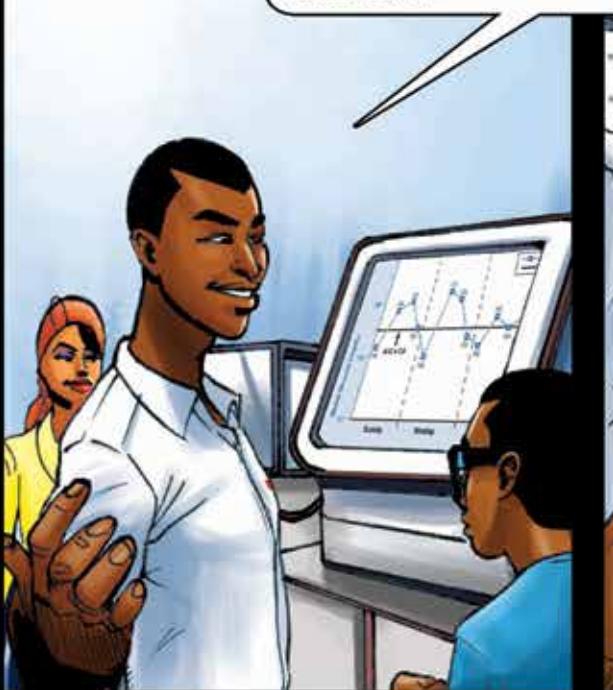
JAANONG RE TSENA MO KAROLONG E KGATHISANG, KITSO. GO TLHOMAGANYA DNA!

RE NA LE DNA MO MOCHINING YOO GO RE FA NOMORE YA SEPHIRI YA DNA MO MOKWALONG.

O RAYA GORE E KGONA GO BALA DIBUKA TSOTLHE TSA MOTLOBO WA DIBUKA WA DNA?

EE KITSOI E KILE YA BO E TSAYA DIKGWEDI GO BALA TLHOMAGANO YA DNA, MME KA MECHINI E MESHA E KGONA GO DIRA JALO MO DIOURENG FELA.

WOW!



FA TLHOMAGANO YOTLHE E WELA
YA BALWETSI, RE KGONA GO
TSHWANTSHANYA DI-GENE TSA
BONE LE GO BATLA SEKONOPELWA
SE SESHA SA MELEMO LE MEKENTO.
KE GONE MOO GOTLHE!

GO A KGATLHISA, MME KE
AKANYA GORE KE NAKO YA
GORE RE BOELE KO
KOKELWANENG.

KE A LEBOGA, MARANYANE

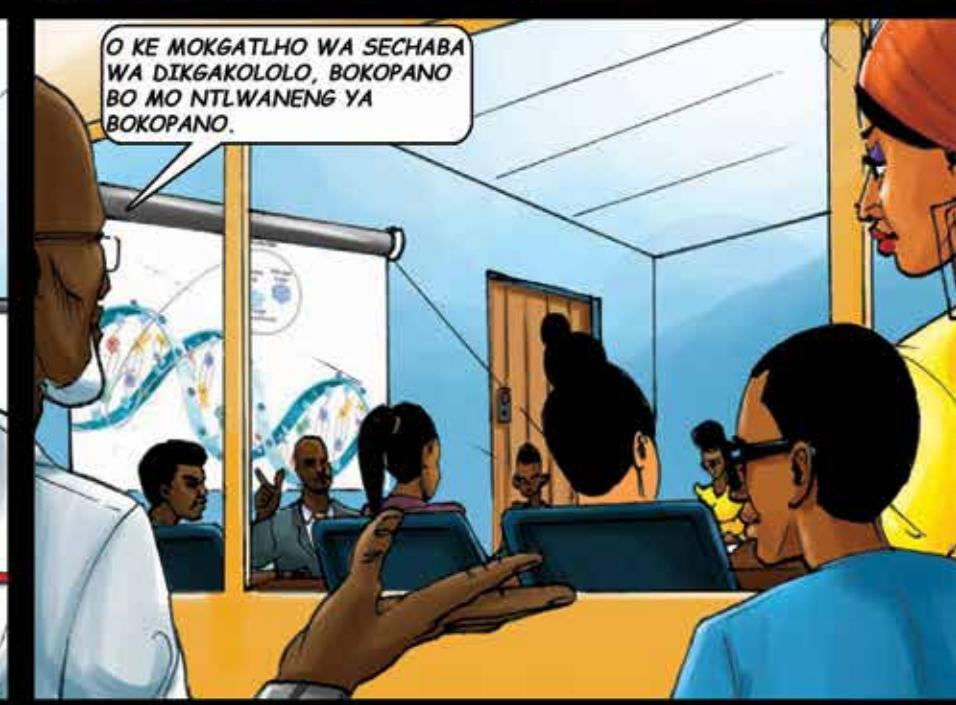
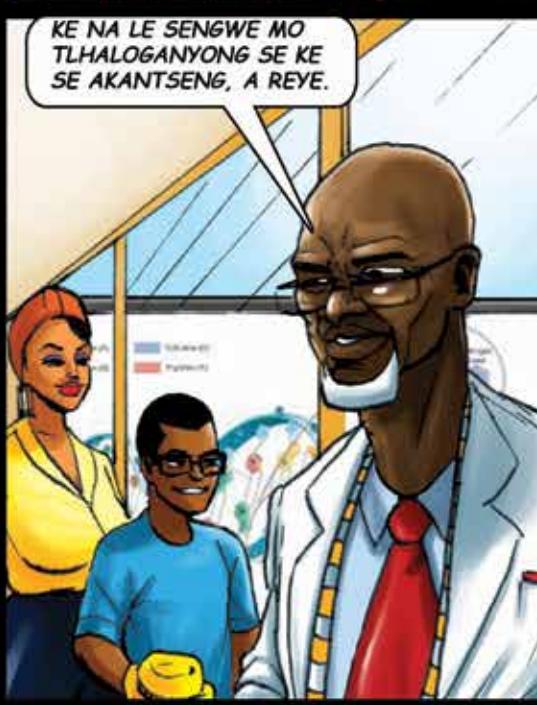
GA KE DUMELE
GORE TIRO E NTSI
JAANA E YA MO
DITEKELETSONG
TSE.

GO A ITUMEDISA ELE RURI.
GARE NKA BO GO NA LE T
SELA NINGWE E KE KA
THUSANG KA YONE!



KE NA LE SENGWE MO
TLHALOGANYONG SE KE
SE AKANTSENG, A REYE.

O KE MOKGATLHO WA SECHABA
WA DIKGAKOLLOLO, BOKOPANO
BO MO NTLWANENG YA
BOKOPANO.



A KE RRE BATHOENG,
KE MOGOKGO WA SEKOLE SA
MEI A LE ENE O TSENELELA
DIPATLISISO?



EE KE ENE, MME GA A TSENELELE DIPATLISISO. RE NA
LE BATHO KA GO FAROLOGANA GO TSWA DIKGWEBONG
LE MEKGATLHONG E FAROLOGANENG GONE FA, BA
EMETSE SECHABA GO NETEFATSA GORE DIPATLISISO
TSA KALAHARI DI AMOGELESEGILE MO SECHABENG.
BATSAYA KAROLO BA - KE BATHO GO TSWA MO TI-
KOLOGONG E DIPATLISISO DI DIRWANG MO GO YONE-
BA EMETSE BOBEKA DIKGANG, DITUMELO TSE DI
FAROLOGANYENG, MEKGATLHO YA DITSHWANELO TSA
SETHO, LE BA LEPHATA LA BOTSGOGO - GARENG GA BA
BABANGWE. MME MO NAKONG YA GOMPIENO GA RE NA
OPE YO O EMETSENG BATLHOKOMEDI, MMANGWANE...



O RAYA GORE NKA TSENA
MO MOKGATLHONG WA
SECHABA WA
DIKGAKOLOLO?

FA O BATLA, RE KA
ITUMELA FA O KA
NNA LELOKO.

EE...

JAANONG LA RENG KA
BANA BA BA TSHWANANG
LE NNA? A RE NA LE
BOKOPANO LE RONA?

KE ENG O SA LEBE KO
NTLE KA SEOKOMELA
BAGWE?

BANA BA LE KE
BO MANG?

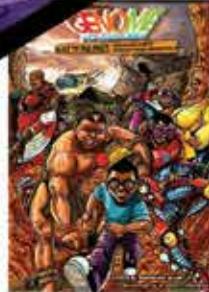
KE MOKGATLHO WA BANANA
WA TEEN CLUB- MOKGATLHO
O KOPANANG GANGWE MO
KGWEDING GO ITHUTA KA TSA
MARANYANE, MAGOKONYANE A
BOTSHETO, LE GONNA LE
BOKOPANO JWA BATHO BA BA
TSWANG MO SECHABENG BA BA
TSAYANG KAROLO MO
KOKELWANENG YA RONA.

NKA
TSENELELA
LENG?

A RE BONE...
GO KA RENG GONE
JAANONG JAANA?

NKA TSENA,
MMANGWANE?

EE MOTHO.!



A O JELE MONATE
KO TEEN CLUB?

EE! RE ITHUTILE KA GO
BILETSWA TLHATLHOBO YA
TIRO, KE KOPANE LE BANA BA
BA SIAMENG GO TSWA GABORONE,
BA RE RUTILE KA DNA-

MME KENE KE SETSE KE ITSE TSEO
TSOTLHE.

OK, GO TSWA KO
SEKOLONG?

NNYAA, MMANGWANEI
KE NNA KE GO
BOLELELA-GO TSWA
KO BAGALENG.

GO SIAME, KITSO,
BAGALE BA BAFE?

MONGWE LE MONGWE O RE
KOPANENG LE ENE TSATSIENO
BOTLHE KE BAGALE JAAKA KE
SETSE KE GO BOLELETSE.

DR MOSENODI KE DR MABOKO!
BOTLHE KE BAGALE TOTA KA
MAATLA A NNTE.

KE AKANYA GORE O NEPILE;
KE BAGALE BA RONA KA
DITSELA TSA BONE MONGWE
LE MONGWE WA BONE. DILO
TSE BA RE DI DIRELANG-GO
FODISA MALWETSI, GO NNA
RE ITEKANETSE

JAAKA WENA KITSO, KA GO
TSENELELA DIPATLISISO.



**GO RIBOLOLA NOMORE YA SEPHIRI: KITSO O UPULOLA KA DNA LE SEGOTSO
E GATISITSWE MO BOTSWANA KE BA BOTSWANA-BAYLOR CHILDREN'S CLINICAL CENTRE OF
EXCELLENCE**
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BATHUSI BA TIRO E: THATO REGONAMANYE, TAPIWA KANGWA, DR BATHUSI MATHUBA

BAKWADI BA BANANA BABA TSERENG KAROLO: ANNAH KETLAARENG

THUSO YA GO LOMAGANYA GO TSWA MO BABATLISI BA BOTSWANA CAFGEN: SHEIK H. HASSAN (BOTSWANA MUSLIM ASSOCIATION); CINDY KELEMI (BONELA: BOTSWANA NETWORK ON ETHICS, LAW, AND HIV/AIDS); NON-TOMBI KRAAI (INTERNATIONAL LINKS); IRENE KWAPE (BOCAIP: BOTSWANA CHRISTIAN AIDS INTERVENTION PROGRAMME); PHENYO MAHUMA (BCC: BOTSWANA COUNCIL OF CHURCHES); ALICE MOGWE (DITSHWANELO: THE BOTSWANA CENTRE FOR HUMAN RIGHTS); KGORELETSO MOLOSIWA (BONEPWA: BOTSWANA NETWORK OF PEOPLE LIVING WITH HIV AND AIDS); ONKEMETSE MONTSHEKI (CHILDLINE BOTSWANA); JOB MORRIS (SAN YOUTH NETWORK); KAGO MOTEKETELA (YOUTH MEMBER); BUYANI ZONGWANI (MISA: MEDIA INSTITUTE OF SOUTHERN AFRICA), TIDIMALO DENNIS (BOPHA: BOTSWANA PUBLIC HEALTH ASSOCIATION)

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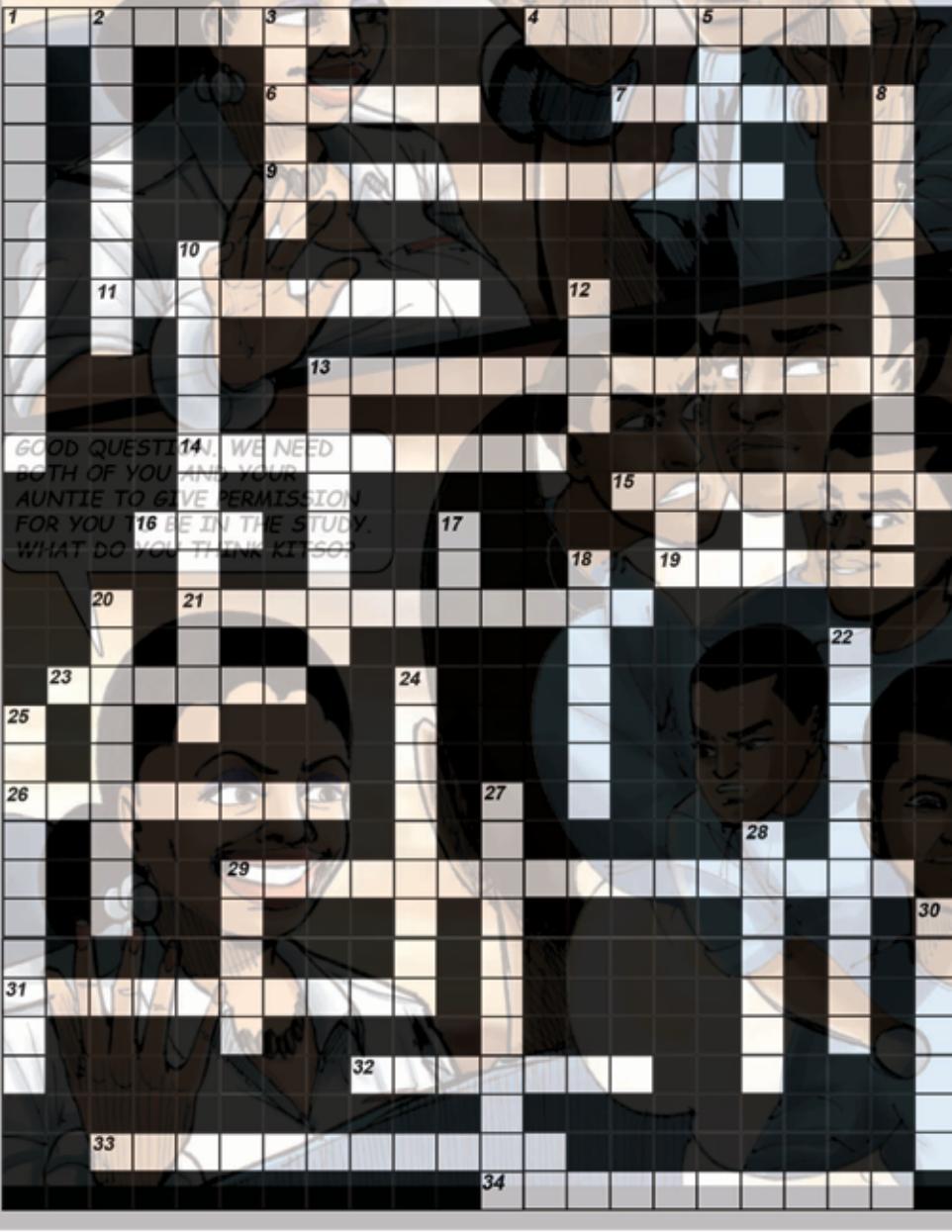
MORANODI WA SEKGOA GO YA SETSWANENG: CAROL KGAFELA

KGAKOLOLO

LE FA RE KILE GO NETEFATSA BOAMMAARURI JWA BORANYANA JO BO FITLHELWANG MO BUKANENG E, POLELO E GA E A DIRELWA GO DIRISWA JAAKA KGAKOLOLO YA BONGAKA. GO YA KA FA MOLAO O LETLANG KA TENG, BAKWADI LE BAGATISI BA BUKANA E GA BA TSEE BOIKARABELO FA GO TLHAGA DIKGOBALO, TATLHEGELO KANA TSHENYEGO TSE DI KA BAKWANG KE GO DIRISA POLELO YA BUKA E

GA GONA KAROLO EPE YA KGATISO E E KA DIRWANG GAPE, KANA YA BOLOKWA KANA YA GATISIWA GAPE KANA YA FETISIWA GOPE FELA, LE HA ELE GO NTSIFADIWA, KGOTSA GO BOLOKIWA MO DIDIRISIWENG TSA MOTLAKASE, KANA SEPE FELA NTLE GA TETLA GO TSWA MO BAGATISING.

CROSSWORD PUZZLE



ACROSS

- The process of passing traits and genetic characteristics from parents to their offspring.
- A list of ancestors, a family tree.
- One of two copies of each gene.
- A coiled structure of DNA.
- An infectious bacterial disease that can affect almost any tissue in the body, especially the lungs.
- A measure of the number of viral particles present in an organism.
- A diagram that is used to predict an outcome of a particular breeding experiment.
- A jelly-like fluid that fills each cell and is enclosed by the cell membrane.
- A lab test that measures the amount of CD4 cells.
- A type of virus that infects and destroys the body's immune system.
- An agreement by an individual not competent to give legally valid, informed consent.
- The process at which proteins are created at ribosomes.
- All the collective DNA contained in the chromosomes of an organism.
- A change in the DNA code, an addition, a deletion or a substitution resulting in a different protein being produced.
- When a certain trait is stronger than its opposite.
- several membrane-bound compartments with specialized functions that are present in the cell cytoplasm.
- A membrane-bound sac in plant or animal cells that is involved in storage or transport of the products of metabolism.
- Linear strands of DNA found in the nucleus of most living cells, carrying genetic information in the form of genes.
- An abnormal, crescent shaped red blood cell containing defective haemoglobin, caused by a hereditary disease called sickle cell anaemia.

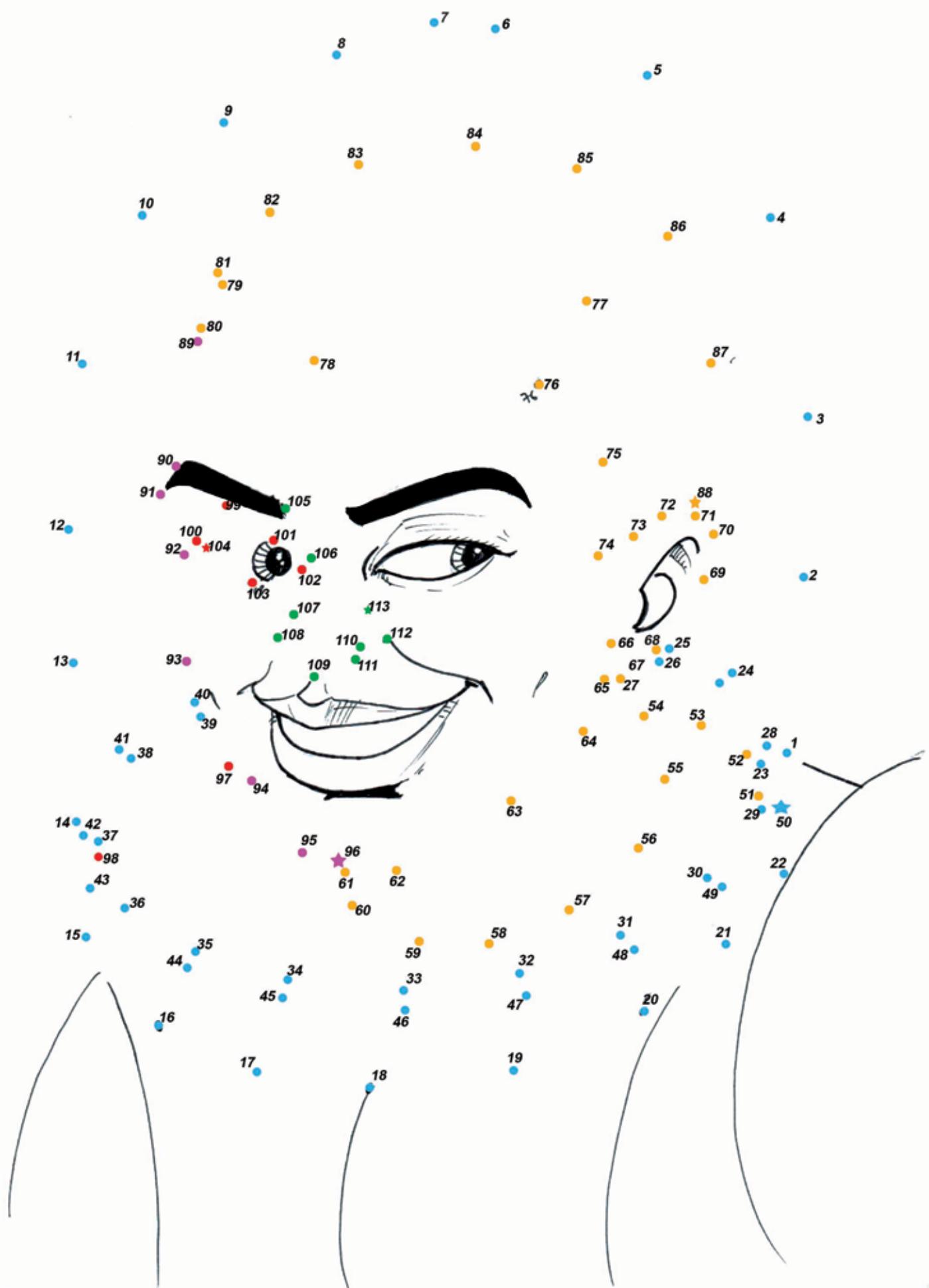
ANSWERS



DOWN

- Two different forms of a gene.
- An allele/gene copy most likely to stay hidden in offspring.
- Specific physical characteristics of organisms that make them unique.
- An organelle consisting of a stack of flattened sacs that is involved in the modification and sorting out of proteins.
- A thin biological membrane that separates the contents of the cell with the external environment.
- A process involved with the synthesis of proteins where a DNA template is used to make RNA.
- A building block of DNA.
- Molecules composed of one or more chains of amino acids.
- Ribonucleic acid.
- An agreement by an individual that is competent to give legally valid, informed consent.
- The set of observable characteristics of an individual resulting from the interaction of its genotype with the environment.
- Small leucocytes (white blood cells) with a single round nucleus, occurring especially in the lymphatic system.
- Protein molecules on the surface of cells to which complementary molecules such as hormones or antibodies recognize and bind.
- An individual having two identical alleles of a particular gene or genes and so breeding true for the corresponding characteristic.
- The building blocks of nucleic acids, RNA and DNA.
- An infectious disease caused by parasites such as mosquitoes.
- Part of every cell that carries information that determines the features or characteristics inherited from parents.
- Extra ingredients added to blood to break up cells and isolate DNA.

CONNECT THE DOTS...



GENOME

ADVENTURES



THANODI

ASSENT- TUMALANO YA MOTHO YO O SA LEKANANG GO FA TETLELELOE KA FA MOLAONG.

BROAD CONSENT- FA BATAYA KAROLO MO DIPATLISISONG BA DUMELA GORE MADI A BONE A DIRISIWE MO DIPATLISISONG MO ISAGONG.

CENTRIFUGE- SEDIRISIWA SA NTLO YA DITEKELETSO, SE SE DIRISIWANG GO TLHAOLA DIELEDI TSA BOKETE JO BO FAROLOGANENG, KA GO DI DIKOLOSA KA LOBELO LE LE KO GODIMO.

CONSENT- TUMALANO YA MOTHO YO O KGONANG GO FA TETLELELO KA FA MOLAONG.

DNA SEQUECNING- MOKGWA WA GO BONA GORE MATUTE A DI NUCLEOTIDE A TLHOMAGANA JANG MO DNA.

FLUOROMETER- SEDIRISIWA SE SE DIRISEDIWANG GO KALA BOKETE JWA LESEDI MO SENGWENG GO BONA GORE SE TOPELEGETSE GOLE KAHE.

LONG TERM PROGRESSOR- MOTHO YO ERENG MORAGO GA GO TSENWA KE MOGARE WA HIV A TSAYA LEBAKA GO LWALA BOLWETSI JWA AIDS.

PHLEBOTOMIST(MOTSAYAMADI)- MOTHO YOO RUTETSWENG GO TSAYA MADI A MMELE MO BALWETSING A KA NNA A GO FIWA BA BA A TLHOKANG, GO TSHWELWA BALWETSI KGOTSA DITLHATLHOBO TSA BONGAKA.

RAPID PROGRESSOR- BATHO BA ERENG FA BA SENA GO TSENWA KE MOGARE WA HIV BA BO BA LWALA BOLWETSI JWA AIDS MO NAKONG E KHUTSHWANE.

REAGENTS- METSWAKO E TSENNGWANG MO MADING A MMELE GO THUBA DIKAROLWANA TSA SETSHEDI TSE DINNYE LE GO TLHAOLA DNA.

STETHSCOPE- SEDIRISIWA SA BONGAKA SE SE DIRISIWANG GO REETSA MEDUMO E DIRAGALANG MO MMELENG JAAKA GO ITAYA GA PELO.



GENOME ADVENTURES

MOTSHAMEKO O WA GENOME ADVENTURES KE MENGWE YA MEGOPOLO LE THULAGANYO YA GO AKARETSA MERAFE YA COLLABORATIVE AFRICAN GENOMICS NETWORK (CAFGEN) MME E ROTLOEDIWA KE WELLCOME TRUST. CAFGEN KE LELOKO LA BOKOPANO JWA HUMAN HEREDITY AND HEALTH IN AFRICA CONSORTIUM (H3AFRICA) MME E RULAGANNGWA KE KOKELWANA YA BANA YA BOTSWANA-BAYLOR CHILDREN'S CLINICAL CENTRE OF EXELLENCE (COE).

GENOME ADVENTURES E DIRISA DITHUTOPUISANYO GO ABELANA MEGOPOLO LE SETSHABA LE BATSAKA KAROLO, THUTO LE BOTAKI DIPOPÄE, BOBEGA DIKGANG, LE SETSHABA KA KAKARETSO BOGOLO JANG BANANA GO RUTA KA BORANYANE JWA SEGOTSO LE DIPATLISISO. DIKAROLO TSE TSA GENOME ADVENTURES DI IKAELELA GO RUTA SETSHABA KA DITSO TSA SEGOTSO LE KAMANO YA GONE LE BORANYANE JWA GO GOTSA, POPEGO LE TIRISO YA DNA LE DI-GENE (SEGOTSO), KAMANO YA BORANYANE JWA SEGOTSO LE BOTSGOGO. E RUTA GAPE LE TSAMAISO YA GO TSAYA KAROLO MO DIPATLISISO TSA BORANYANE JWA BOTSGOGO LE SEGOTSO GO AKARETSA LE TSAMAISO E E AMOGELESENGANG YA GOITETLA ONA LE KITSO MO DITLHOTLHOMISONG, TLHALOGANYO YA GO ROMELA LE GO BEWA SENTLE DIDIRISIWA KANA MADIA BATSAKA KAROLO LE GOTSAKA KAROLO GA SETSHABA.

GO ITSE THATA KA SE, ETELA DITSEBE TSA GENOME ADVENTURES MO INTERNET:

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Barotloetsi

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