INTRODUCTION

There is great genetic diversity in the livestock found Africa. This diversity arises from combination of
(1) Capture and domestication of pre-existing wild ancestors followed by accumulation of new
types. 
(2) Introduction by migration and trade.
(3) Selection of desirable traits by nature and man.

Resistance or tolerance to local diseases is an attribute that is commonly observed among African
livestock. This poster gives a synopsis of some of the work done at ILRI to understand the tolerance of
some cattle types to an important and truly African disease, trypanosomiasis.

The advances in genome sciences makes it possible to study how the hard wiring of different
cattle’s genetic blue print affects its function during a challenge such as infection. Gene expression profiles of 20 Boran and 20 N’Dama cattle were assayed before, and during the progression of infection with trypanosomes. Differences in genome function are observed between tolerant (↓) and susceptible (▲) cattle (Top left). Some of these differences are associated with the presence and progression of trypanosome infection (Top Right), and are providing useful leads in discovering the mechanisms underlying tolerance to disease.

Kuri. Excellent swimmers, they have uniquely and quite literally taken to the water and occupy a
wet niche around L. Chad. 

Sanga. A hybrid between the Zebu and the African long horn cattle. These beautiful cattle are
good trekkers, large bodied and tolerant to tick borne
diseases.

Boran (▲). These Zebu cattle arrived in Africa 1000 to 3000 years ago. They are
well adapted to hot dry zones. They are favored for their large body size, but
susceptible to trypanosomiasis.

N’Dama (↓). These long horn cattle were domesticated in
Africa. They are well adapted to the hot humid zones and are
resistant to trypanosomiasis.

OPINION

In taming wild animals, humans captured just a tiny bit of the genetic diversity available at the time of the
domestication events. The wild ancestors of most of today’s domesticated livestock are extinct along
with their genetic make-ups.

Current demands by a burgeoning population that is more cash
empowered is fuelling the demand for milk, meat and
eggs.

The consequence is that livestock keepers in Africa
are rapidly changing the
genotypes of their animals
by adopting exotic types
that are perceived to be
more productive.

This has the possible
consequence of eroding
adaptive genotypes that are
equally useful in
establishing a livestock
sector that is robust to the
conditions of life -
especially climate change
and the associated change
disease burdens, or
variability of feed supply.

The familiar black-and-white
Holstein cow, White leghorn
chicken and Large white pig,
which have spread around
the globe as they replace the
local breeds of farm animals
kept in the tropics, pose a
black-and-white plague, a
genetic monopoly threatening our ability to adapt to future,
unpredictable change.

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