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**RAISING FISH WITH CARE**  
UNDERSTANDING AND APPLYING THE TEACHINGS  
OF ANIMAL WELFARE IN AQUACULTURE

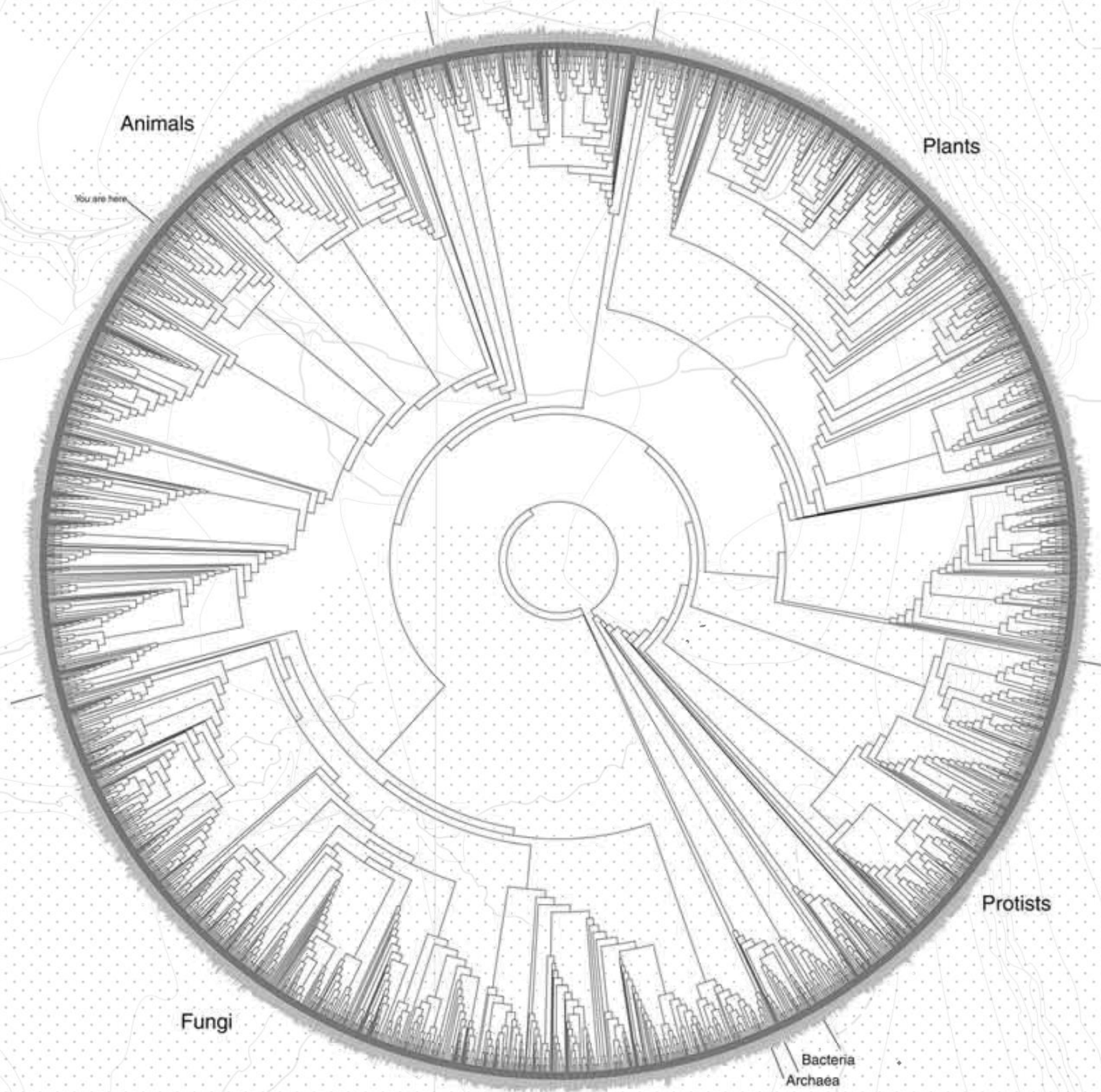
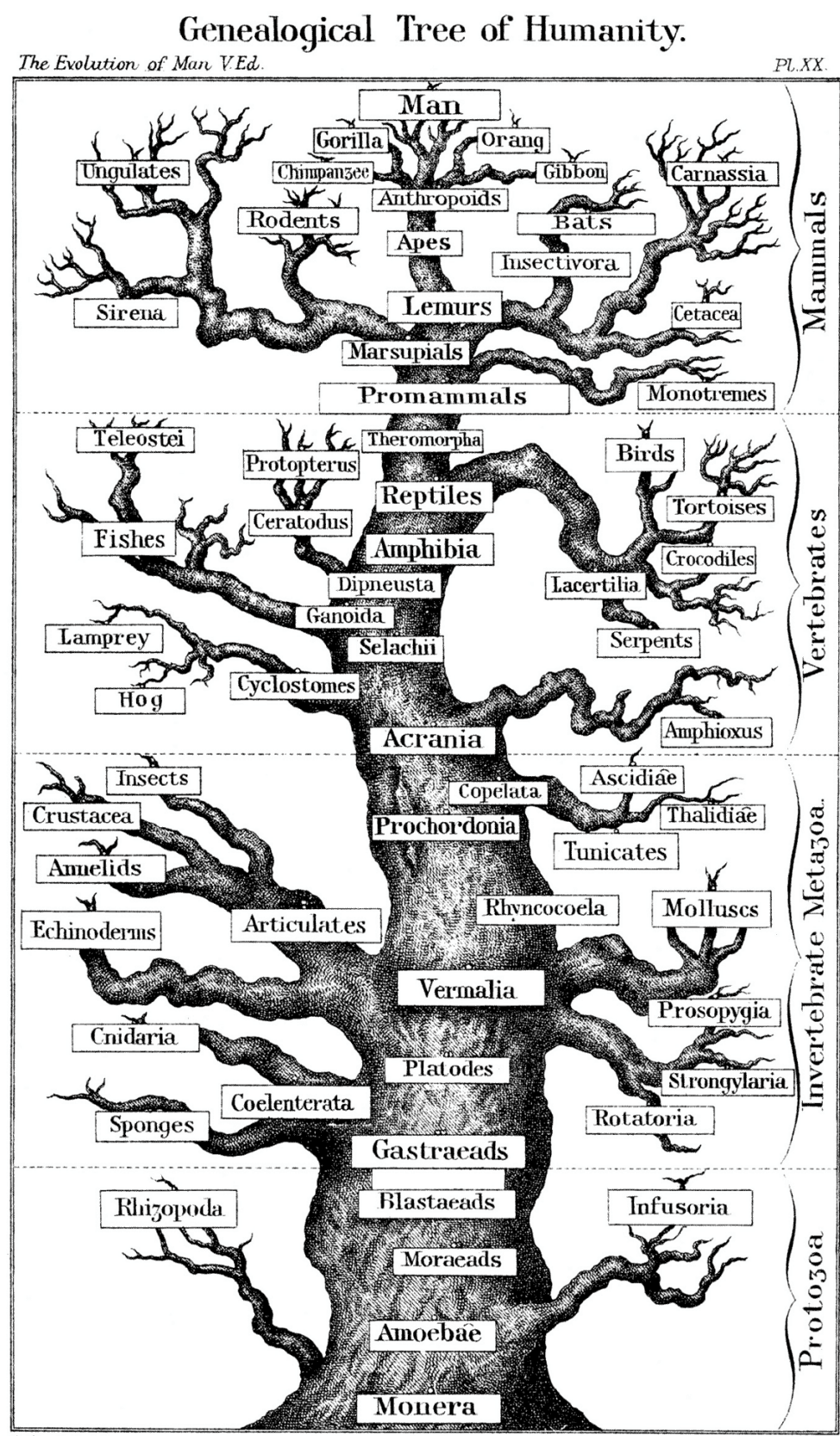
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Jesse Trushenski



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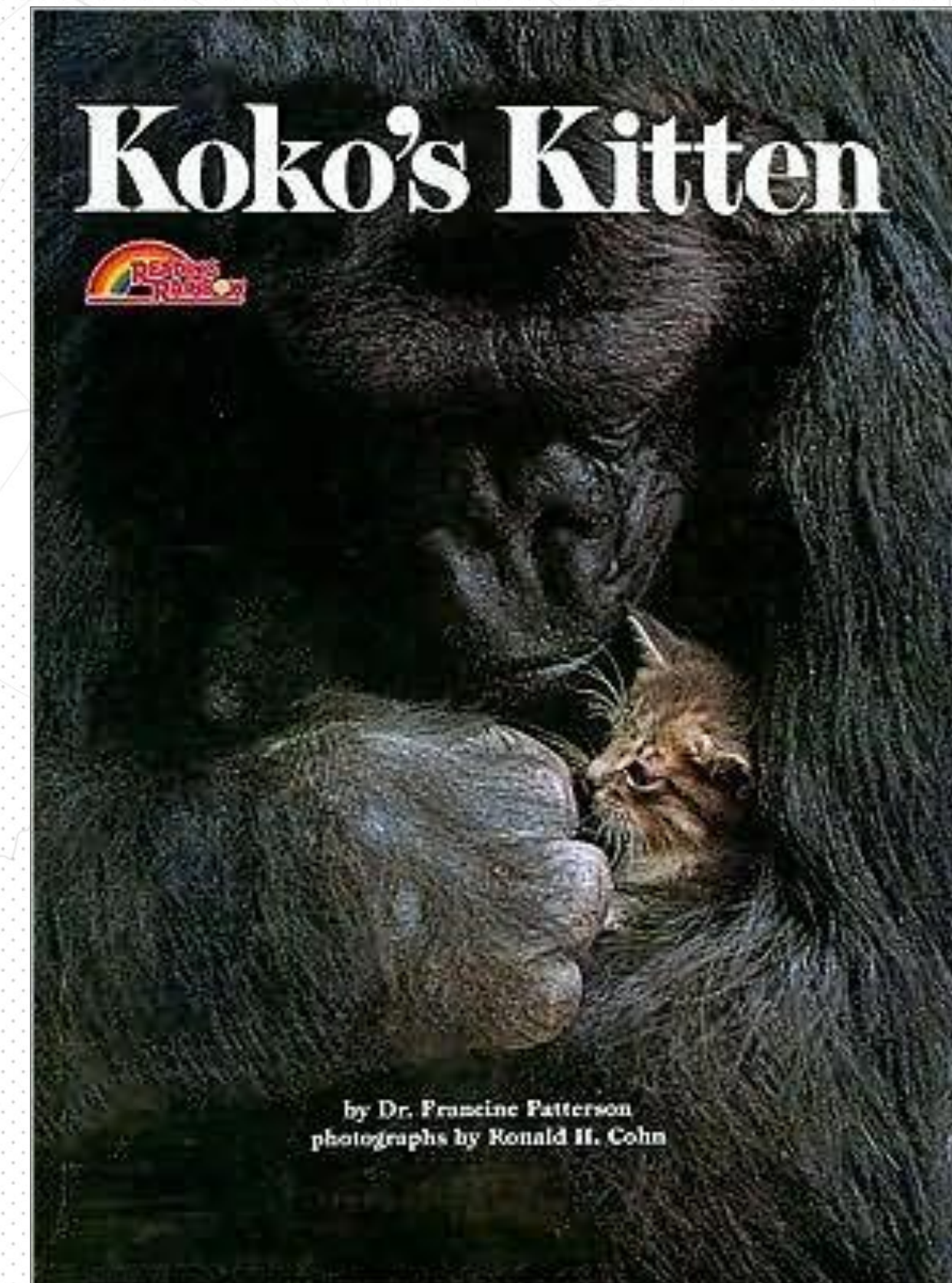
# CHANGING VIEWS OF LIFE ON EARTH



MODERN MEASURES REVEAL UNEXPECTED SIMILARITY  
HUMANS ARE NO MORE THAN 0.1% DIFFERENT FROM EACH OTHER  
AND SHARE 99% OF OUR DNA WITH CHIMPANZEES AND BONOBOS



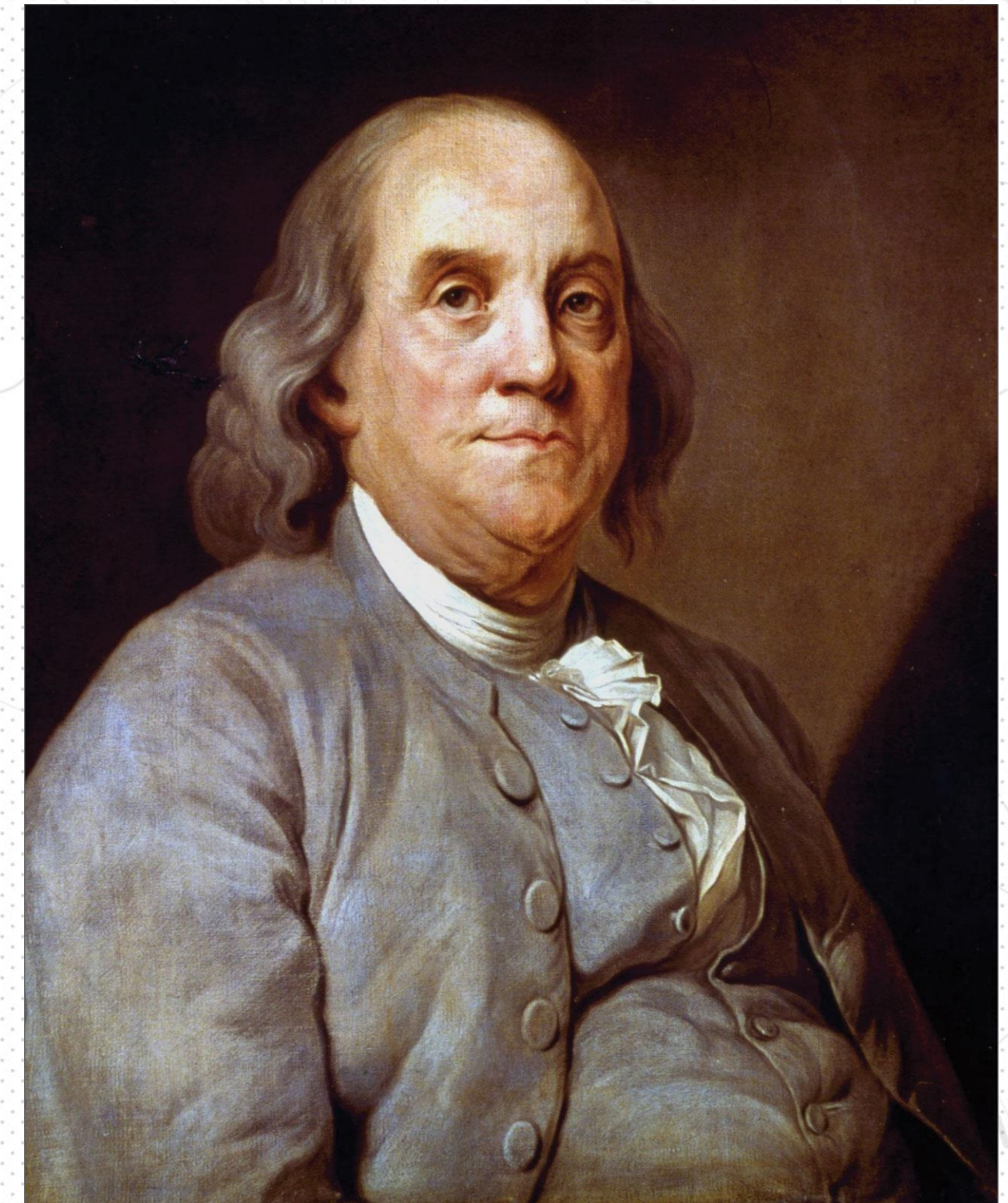
# CHANGING VIEWS OF LIFE ON EARTH



WE AREN'T AS SPECIAL AS WE MIGHT THINK  
MANY ANIMALS FASHION TOOLS, COMMUNICATE VIA COMPLEX  
LANGUAGES, AND SHOW EVIDENCE OF RICH INNER LIVES

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# THE ONLY ETHICAL SPECIES



WITH KNOWLEDGE COMES POWER & RESPONSIBILITY  
MORALITY IS OUR UNIQUE GIFT—WITH IT COMES BURDEN OF ETHICAL  
DILEMMAS AND THE RESPONSIBILITY TO GRAPPLE WITH THEM



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# RAISING ANIMALS ETHICALLY



FARMED ANIMALS DESERVE OUR RESPECT  
IGNORING OR DISMISSING THEIR INTRINSIC VALUE IS NOT THE ANSWER



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# GENERAL PRINCIPLES OF WELFARE

## **BREEDING**

Genetic selection should always consider health and welfare

## **SAFETY**

The physical environment should be suited to the animal and minimize the risk of injury and disease

## **SPACE**

The physical environment should allow for safe, comfortable movement and the expression of normal behavior

## **SOCIALIZATION**

Groupings of animals should be managed to minimize injury and distress and support positive social behavior

## **ENVIRONMENT**

Environmental quality should support good animal health and not be aversive to the animals



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# GENERAL PRINCIPLES OF WELFARE

## **NUTRITION**

Animal should have access to sufficient, suitable feed to support performance and prevent prolonged hunger or malnutrition

## **HEALTH**

Pathogen exposure should be prevented to the extent possible, and diseased animals should be treated promptly or killed humanely

## **PAIN**

Painful procedures should be avoided or managed to the extent that available methods allow

## **HANDLING**

Handling should foster a positive relationship between animals and farmers and should not cause injury or avoidable stress

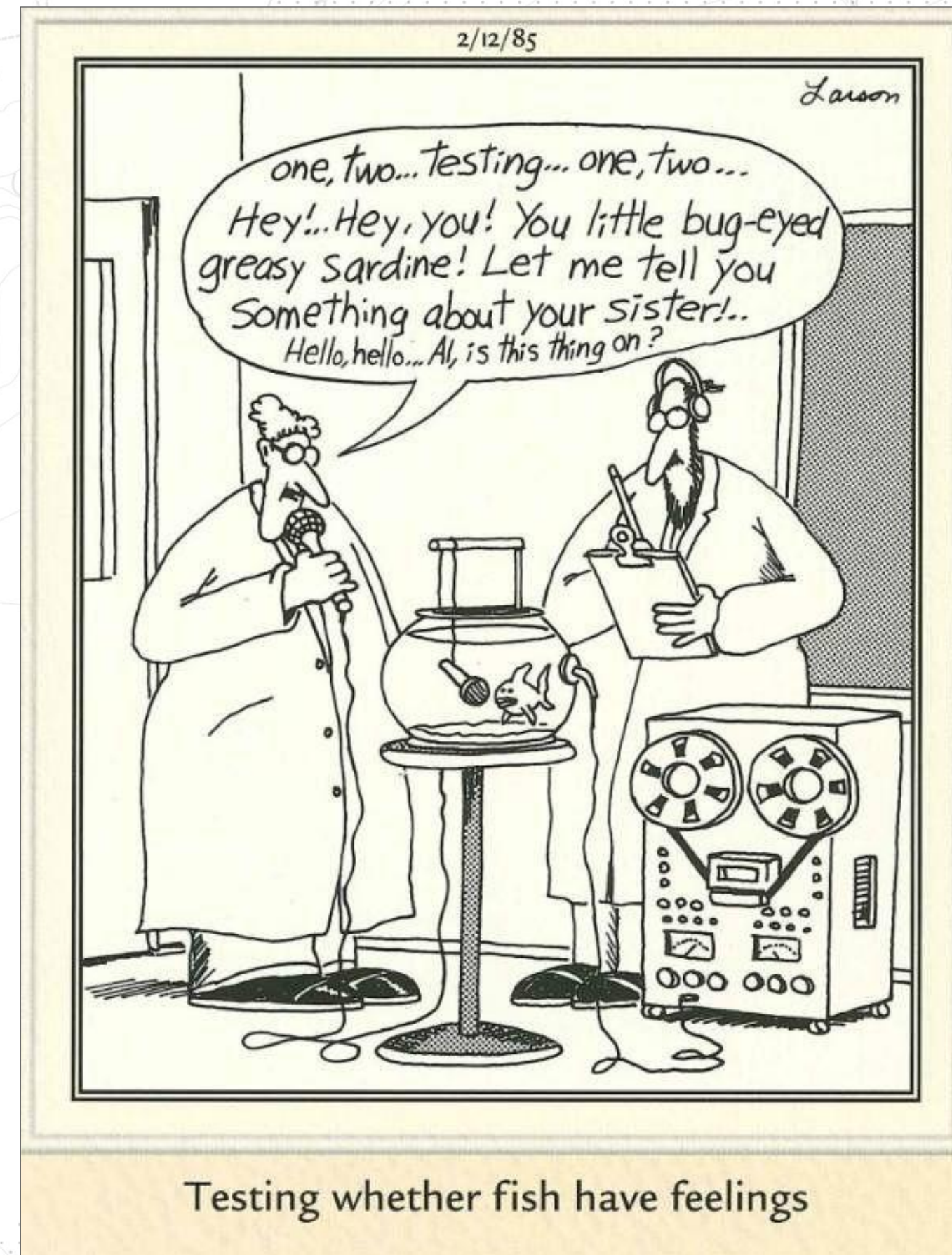
## **EXPERIENCE**

Farmers should have sufficient knowledge and skill to properly care for the animals in their charge



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# THE QUESTION OF PAIN



THERE IS NO CONSENSUS AS TO WHETHER FISH FEEL PAIN  
BUT COMPREHENSIVE ANIMAL WELFARE IS NOT JUST PAIN AVOIDANCE

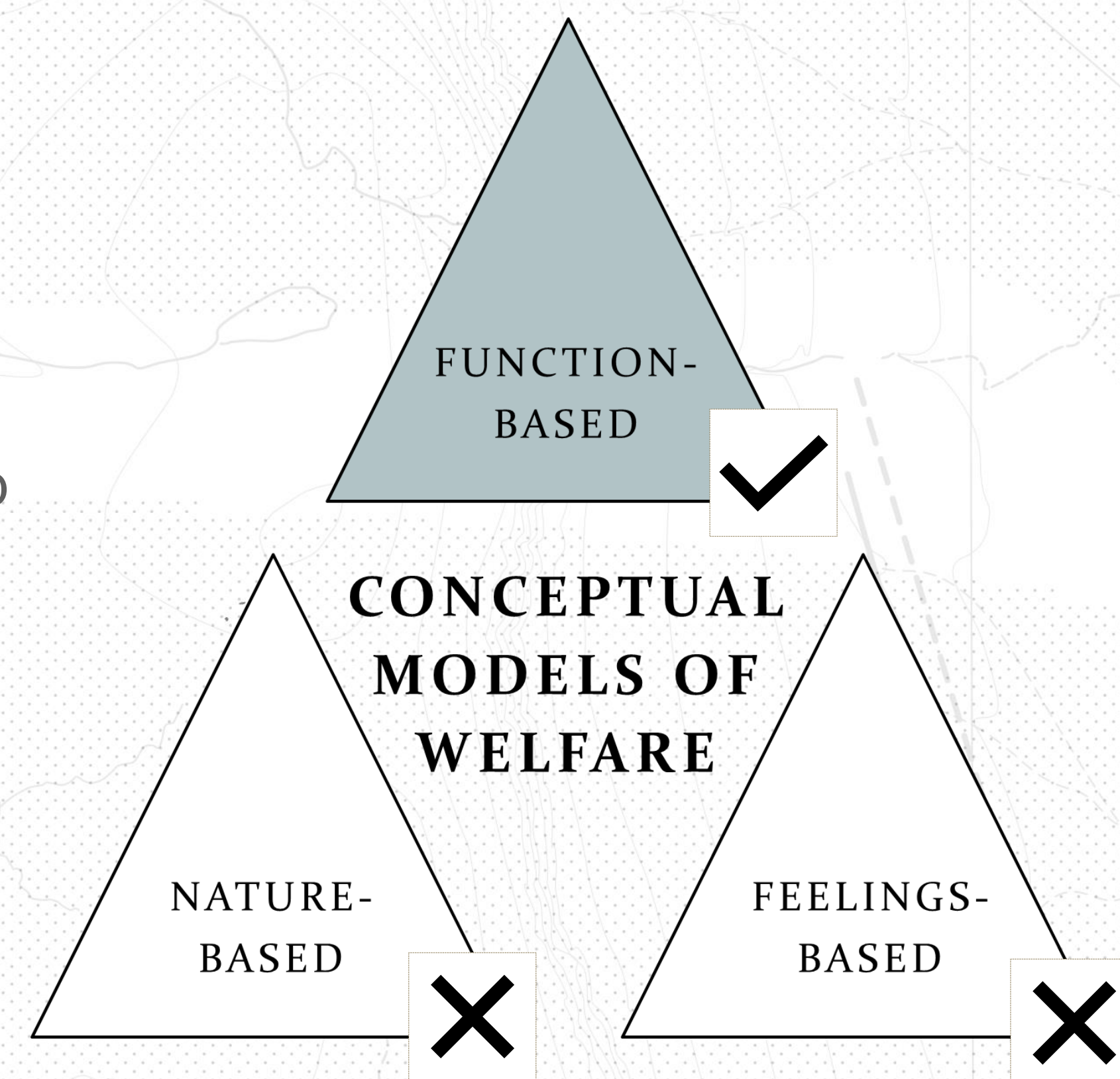
# A PRAGMATIC APPROACH

## ANIMALS IN OUR CHARGE ARE OUR RESPONSIBILITY

Animal sentience is not irrelevant, but should not determine whether we consider the well-being of animals in our charge

Regardless of whether fish can feel pain, they can experience stress, be injured, or contract diseases—all of which are contrary to welfare standards, but are within our control

Function-based welfare is based on this pragmatic approach, and considered that an animal's welfare has been satisfied if the animal is in good health, shows normal biological functioning, and good growth



FOCUS ON FUNCTION-BASED WELFARE

THE MOST RATIONAL APPROACH IS TO ADDRESS WELFARE IN TERMS OF THE CONDITIONS AND PRACTICES THAT SUPPORT BIOLOGICAL FUNCTION



# TAKING LIVESTOCK INTO THE LAB

## EATING ANIMALS WITHOUT ACCOUNTABILITY?

Stem cells or skeletal muscle cells harvested from animals—including fish—can be cultured and assembled into products resembling traditional meat

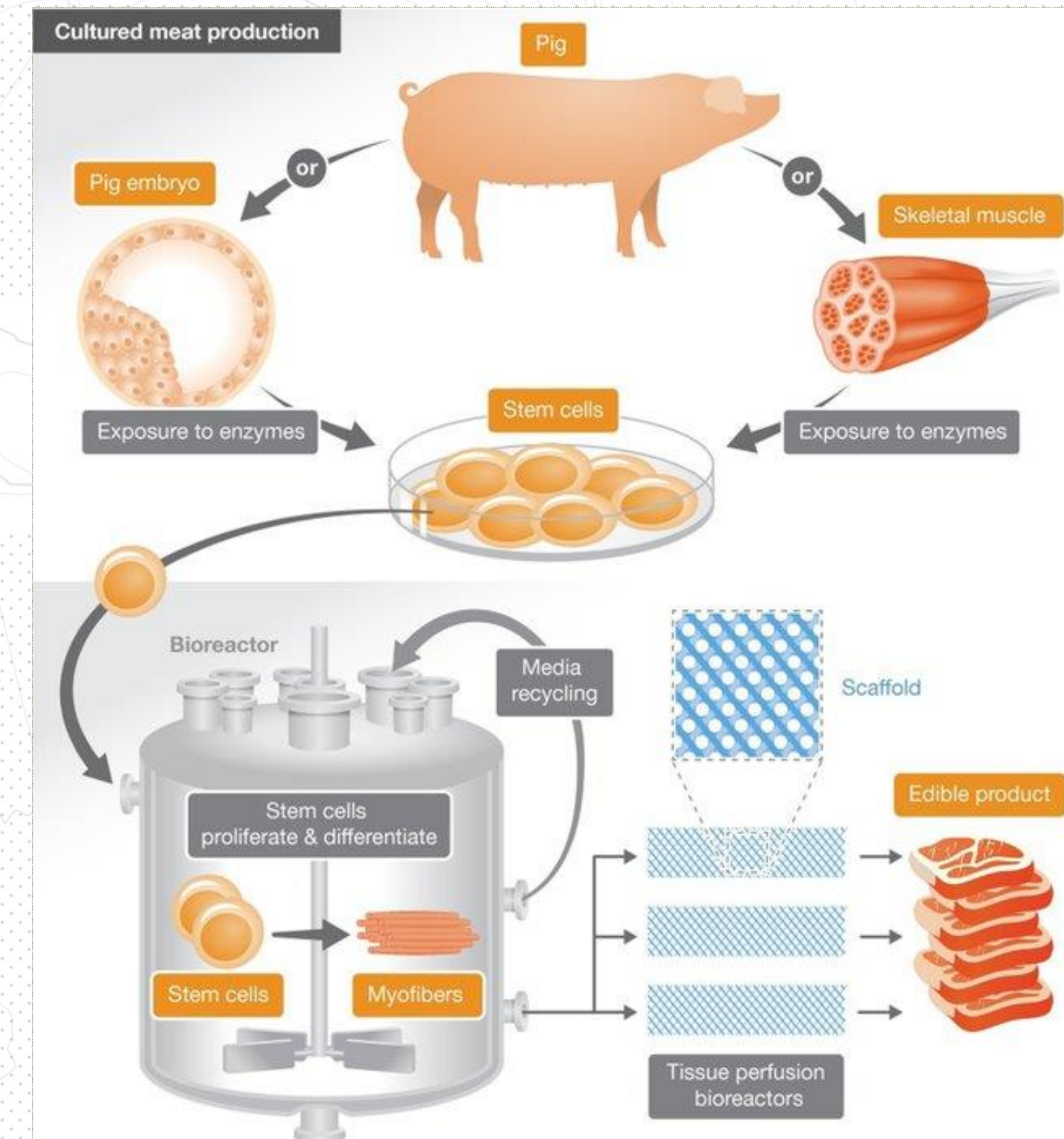
Cultured meat has been touted as the solution to the ethical dilemmas associated with eating animals

Environmental impacts of livestock production

Moral objections or religious prohibitions

Agricultural efficiency and access to animal proteins

Animal welfare considerations



## CULTURED MEAT—THE FUTURE OF FARMING?

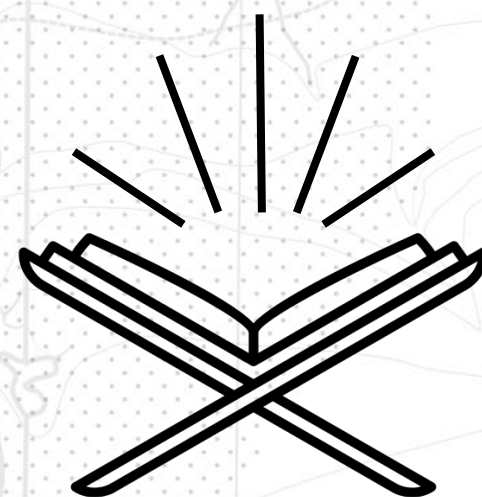
THE MOVEMENT PROMISES ANIMAL PROTEIN WITHOUT MORAL CONSEQUENCE

# THERE IS NO FREE LUNCH



## ENVIRONMENTAL IMPACTS

Cultured meat is incredibly resource intensive and will exacerbate climate change and other consequences of animal agriculture



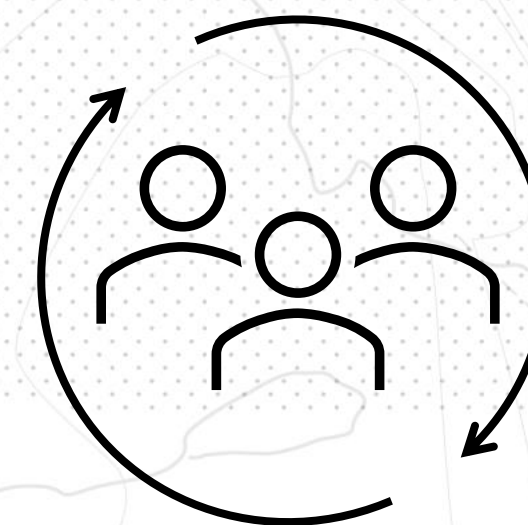
## RELIGIOUS PROHIBITIONS

Dietary laws are partly grounded in respect for animals and the means by which they live and die  
Denying an animal's intrinsic worth is inconsistent with most religious teachings



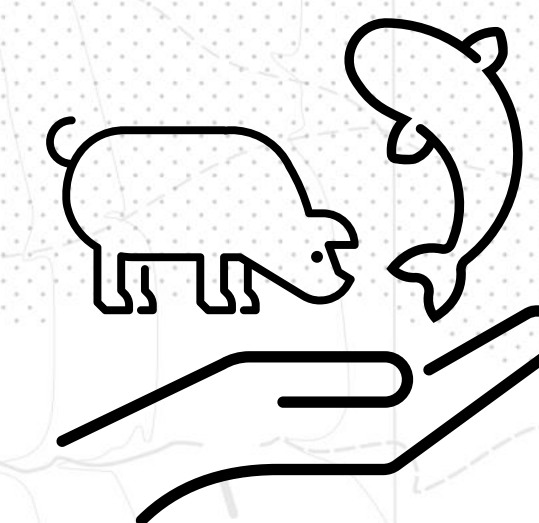
## AGRICULTURAL EFFICIENCY

'Only raising the parts you need' is a facile argument  
Laboratory techniques are unlikely to improve upon millennia of evolution



## SOCIAL RESPONSIBILITY

Costs will decline, but the price of cultured meat is vastly more expensive than conventional meat  
Cultured meat will only be available in the industrialized world



## ANIMAL WELFARE

Cultured meat still requires animals as a source of raw materials  
Ethical agriculture is about accepting responsibility, not avoiding it on a technicality

MORALITY IS A HUMAN RESPONSIBILITY  
DIVORCING ANIMALS FROM THEIR SENTIENCE AND WORTH IS NOT THE ANSWER



# PARTING THOUGHTS

## WHEN WE KNOW BETTER, WE DO BETTER

Animal welfare isn't an opposition talking-point—it's our responsibility as ethical beings and good business practice

Animals that are raised with care grow faster and more efficiently, are healthier, and yield a more valuable product

Welfare standards are different for fish than terrestrial animals—what works for terrestrial animals doesn't necessarily work for aquatic animals, but considering welfare is no less important

Be mindful—have a good reason for everything you do

