

# IdentiGEN



## Whole Foods Market Fresh Meat Farm-to-Fork DNA Tracing Program

Using DNA trace the origin of meat products from point of sale to the animal of origin

### ACCURATE

Giving consumers guaranteed, precise traceability to farm of origin

### TRACE

Meat is the label, no external tags or paper trail

### ASSURANCE

Product authenticity & quality verified for all cuts, including ground meat

### INTEGRITY

Meat origins testable anytime, constant assessment and audit

### BRAND PIONEER

Market a fully traceable meat supply, underpin our meat claims

### LOYALTY

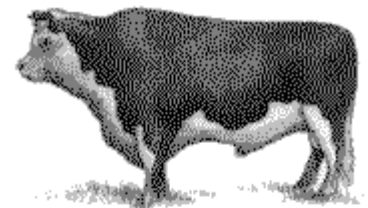
Build consumer confidence with transparency and meat that can be trusted

### SIMPLE

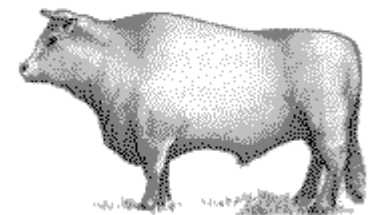
Easy to implement and use, no infrastructure needed

### VALUE

No up-front capital expenditure, cost effective in the region of 2-4c a pound



**Hereford** Tan with white face



**Charolais** Pale cream



**Aberdeen Angus** Black

## MEAT TRACEABILITY RESEARCH\*

Consumers respond more favorably meat origin information than to any other meat quality claims.

-- 74% of US consumers believe that meat traceable to farm is of higher quality --

-- 85% of US consumers want to know where their meat comes from --

-- 92% of US consumers want traceable meat if there is no price difference --

-- US consumers are willing to pay up to 10 cents extra a pound for traceable meat --

Retailers that use and market DNA traceability have seen about 10% increases in meat sales.

## Introduction

The ability to trace a fresh meat product back to its origin is vitally important in today's environment, and will become crucial in the near future. Meat traceability is integral to label claims, meat branding, regulatory compliance, food safety, and brand protection. Added to this are the growing consumer demands to know where their meat comes from.



There are numerous ways to trace meat products back to the farm; all of which rely on tagging the animal or carcass (ear tags, carcass identification, RFID) or on paper records labeling meat boxes delivered to stores. Even so it remains practically impossible to determine where a meat product comes from: external tags and markers leave the product early during processing, and are absent through the cutting stage and in delivered product.

On top of this, meat from different animals and farms can be put into the same box – muddying the origins of the meats.

The TraceBack system utilizes DNA to uniquely identify animals and the meat derived from them, tying products to their origins. Tagging meat's DNA to trace commercial product, including ground meat, to its source animal(s). Since the meat is the trace, meat and its ID remain together through the processing system from farm to rib-eye. This DNA-based system can be used on beef, pork, and any other large mammal.

IdentiGEN is a pioneer in DNA traceable meat. A proven system. Over the past 10 years IdentiGEN has implemented systems throughout Europe and North America with retailers, large beef producers, and Government bodies. This is not a risky untested concept, it is used by major European grocery chains where it's actively communicated to consumers.

Although the idea of DNA sampling sounds complex and involved, in practice it is simple, easy to use and implement, and is cost effective, all while being the most accurate tracing system available. The cost for this system is between of 2-4c a pound.

### How it Works

Genetic tracing immediately brings to mind CSI-like technicians running around and interfering with cattle and production operations. Not so, the technicians are confined to IdentiGEN's lab in Kansas. The DNA tracing system is very flexible, fitting seamlessly into current supply chains. It is implemented in the plant and farm in less than a day, and is exceptionally user-friendly. IdentiGEN uses existing plant software so that no further technology needs to be installed.

The tracing method revolves around sampling. Base DNA (tissue) samples are taken on the farm or at the carcass stage. The resulting meats are then resampled in-store. All samples are mailed to the lab for analyses where the meats are traced back to their origin.



### On the Farm

IdentiGEN uses industry standard, easy-to-use livestock ear tags that work with all commercial applicators. The ear tags take DNA samples automatically when they are put on the animals. The samples and built-in bar codes are simply put into the mail to IdentiGEN for processing. These ear tags are fully customizable, for instance the ear tags could bare WFM's logo.



### Packing Plant

The system at the plant is similarly as straightforward. IdentiGEN processes are minimally invasive, tried and tested in plants throughout the world with no impact on the meat processing workflow.



At the plant, the carcass is sampled with a single use device resembling a pen. The operator simply scrapes the carcass, capturing meat, scans the barcode, and that's it. It operates at the speed of the line with no extra steps or line interruption. At

the end of the day – the sticks are collected and sent to the IdentiGEN lab. The sampling sticks are manufactured with food-safe plastic, and can be stored and transported at ambient temperatures.

### Laboratory

All samples are processed at IdentiGEN's lab in Kansas. Sample sizes are tiny, and the amounts analyzed are on the nano-scale. DNA processing is performed by a nano-dispensing robot that cuts down on human error. Because of the minute amounts involved, similarly tiny amounts of chemicals are used, reducing waste and pollution.



Tests are turned around very quickly. Samples from the plant are processed by the following day. Thus the results are out before meat product arrives in stores, so any issues are known well in advance. This absolutely ensures food safety, reducing the need for expensive (both in terms of money and brand) recalls.

## Benefits of DNA Traceability

Two cornerstones of Whole Foods Market is the commitment to the highest quality products and to exemplary customer service. In an increasingly competitive marketplace, complete meat traceability cements both these cornerstones in the meat department.

DNA TraceBack would enhance WFM's meat quality and branding in parallel ways working simultaneously:

- **Defensive** - Supply Chain – continual audit of WFM meat products and supply chain, knowing what our products are, and where they're from, while ensuring standards are being met. This provides a due diligence file backing up our brand claims, while promoting standards within our supply chain.
- **Offensive** – Marketing, consumer outreach, and competitive positioning – satisfying consumer demand to know more about where and how their meat is produced.

### 1. Supply Chain Benefits

This system offers the ability to monitor and drive improvements throughout the supply chain. The entire production and processing history of a meat product is tracked constantly.

IdentiGEN offers a strong continual audit, not the traditional annually scheduled visits. Since the system is constantly tracked, standards must be maintained. It promotes best practices and cultivates a culture of



accountability and consistent quality among our partners, which is essential to meeting our consumer expectations. All the while giving integrity to our program and our claims.

### **Risk Management**

The genetic sampling is set up to target risk areas in the production chain where errors are likely to occur. In the event of a food recall, DNA tracing has the advantage of locating exactly where meat originates. With constant testing and tracing, any food safety or compliance issues are immediately identified and rectified on the spot. Furthermore WFM would have the ability to compartmentalize any issues or outbreaks by knowing exactly which meats and carcasses were affected and where they were distributed. Thus limiting any recalls to actual affected areas.



### **Regulations**

DNA TraceBack facilitates USDA meat claim approvals. Knowing a piece of meat's production history is crucial to the USDA process. Additionally, utilization of this system allows WFM to make novel claims that our competitors cannot match.

Federal Country of Origin Labeling (COOL) requirements will be implemented at the end of September, 2008. In order for meat products to earn a US label, the source animal must be born, raised and slaughtered in the US. DNA TraceBack offers immediate confirmation of COOL.

Looking to the future, regulations may be introduced requiring that meat product origins be documented, pressure is being brought on lawmakers on this. Another area of regulatory flux may require retailers to justify premium prices added to products. A traceable organic or grass fed product fully validates any premiums charged.

### **Retail Testing**

It is increasingly possible to take products from supermarket shelves and conduct genetic tests to check the veracity of particular claims being made. This creates real risks for retailers as considerable damage can be done to brand equity should meat claims be proven to be false. The press, researchers, consumer advocacy groups, competitors, and the USDA are now going into stores and doing exactly that with purchased meats. The hope is that the meat fails, and negative publicity would ensue.

In March, a large gourmet grocer (Waitrose) in the UK was exposed in this manner by the press. Bacon labeled as coming from a heritage breed for which Waitrose was charging high prices and was shown through genetic testing to be mongrel meat, not entirely from the heritage breed.

## **2. Consumer Outreach Benefits**

There is a distinct emergent trend toward branding in the meat industry. Branding creates opportunities for companies to differentiate their meat products and position them in the marketplace. This has generated demand for systems capable of independently verifying and validating important core meat brand claims communicated to customers. DNA TraceBack supports and underpins WFM standards and claims in any marketing programs.

Shoppers are more in tune than ever to the origins of the food they buy. Clearly branding a meat case with superior quality, full traceability, and food safety has huge profit building potential, while driving foot traffic. Traceable meat allows products to be transparent and delivers credible information about innovative products to consumers.

The use of an open traceable system strengthens natural and organic meat brands, and builds trust with consumers. This is important as more meat suppliers are moving toward organic and natural,



intensifying competition, and allowing consumers greater choice. Full traceability would set the WFM brand apart.

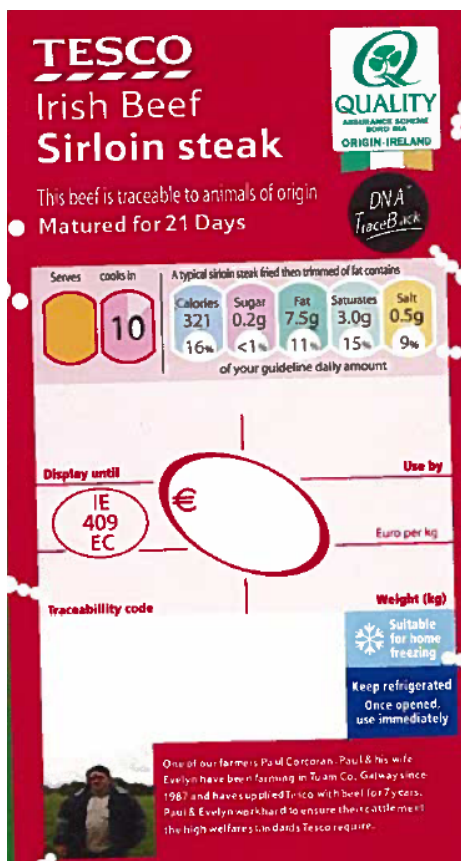
For instance Tesco's, which uses DNA meat tracing, has recently entered the American market, the tagline they use for their meat products is "Great food you can trust".

Traceability allows us to link product directly to producers, promotions can be enhanced and personalized with producers appearing on actual meat labels, in-store signs, pamphlets, radio/print ads, and the website. Retailers already market this TraceBack system in Europe very successfully.

### Price and Quality Assurance

Organic and natural meats carry premium prices, as such the brand is the most valuable asset and is the foundation of their niche in the marketplace; the product has to deliver. Building and maintaining consumer confidence in the brands is central to success. Once fully traceable, WFM can confidently promote our meat brand, display our commitment, and ward off brand dilution by weaker claims from our competitors

Meat quality is important to those who shop. Especially to WFM customers who expect higher standards that go with the higher cost. Quality meat products testable at any time justify higher prices and margins applied to meats such as grass fed etc. IdentiGEN's traceability is also used as a monitoring tool, ensuring that only meat from animals that meet customer specifications is sold in stores.



### Safety Assurance

Recent product recalls have consumers more concerned than ever about where their meat comes from and whether claims related to products can be trusted. Now that the USDA approved the use of cloned-animal food products, consumers want assurance that their meats are from natural animals. The idea that all our food can be anonymous, trucked from anywhere in the world with its origins lost along the way is unacceptable to many. Transparency supports consumer confidence in the fresh meat category and builds comfort and trust. With constant genetic traceability, the meat supply is known and safe. In any recall situation WFM can immediately assure customers on the safe origins of our meat products.

### Scope of IdentiGEN

Beyond tracing, IdentiGEN can also screen other key quality aspects of the meat as part of the process, such as authenticity (organic or natural), maturation, grade, species, etc. as part of

the program. Animal age can be incorporated – ensuring no animals greater than 30 months are in the production system. The technology can even trace what an animal was fed, and animal welfare claims such as naturally raised, and no hormones, all based on feed residues present in the meat.

Furthermore vac-pac dates can be verified, identifying if meat is coming in too early, or not hanging long enough. Such performance indicators can be measured as part of the program ensuring only the highest quality correctly matured meats are served to the customer.

### Conclusion

The largest benefit is complete meat supply chain transparency, which gives numerous knock-on advantages.

At present WFM meat traceability is a paper trail that is not very transparent. The key difference with the DNA system is having a traceable animal versus a traceable label. Tags can fall off. Labels confused. Here a label is no longer needed, the label is in the meat.



## WFM – Coleman Organic Beef Pilot Program

In late 2007 a pilot project assessed the feasibility of IdentiGEN's DNA-based system within the WFM supply chain. The program was in full partnership with Coleman Natural Foods Organic Beef, with a total of 562 cattle included. DNA was used to uniquely identify cattle and to trace commercially produced meat back to the source animal. Additionally, the test checked the integrity of Whole Foods Organic Beef.

### Method

DNA from all of WFM-Coleman's organic cattle were initially taken at the plant, plus the resulting meat cuts were then also sampled. Lastly organic beef samples were taken at two Denver area WFM stores. Genetic analysis was carried out on all samples to assess system traceability and for other performance data.

### Results

- Following the initial set-up period, full meat traceability was maintained at levels of 95-100%<sup>1</sup>. Some dips occurred in weeks 10-12, indicating handling errors or a real traceability failure.
- To demonstrate traceability to store meat case – samples of organic beef were taken in store. The overwhelming majority were fully traced. However one rib eye and two New York strips did not show any matches, which could relate to sampling errors, or a supply chain process failure.
- Ground beef samples were taken at the line, as well as in the stores. The test results confirmed 100% of ground beef batches linked back exclusively to organic animals from the previous weeks slaughter.
- Secret shopper tests were also carried out on organic meats in stores. Organic beef products purchased at WFM stores were full matches. However only 50% of the samples from the Wild Oats store matched organic beef. Indicating either that the beef did not originate from the Coleman organic program, or that a traceability error was detected.



### Summary

This trial demonstrated the ability to readily implement a WFM DNA-based meat traceability solution, without impacting the speed of business/production.

The trial had immediate benefit, when non-conformance issues were found, Coleman QA staff were able to instantly resolve the processing problem, and revised procedures. This project highlights that non-conformances do occur over time, but with continuous monitoring with DNA-traced meat allows problem areas to be pinpointed and rectified swiftly. Coleman was very supportive and indicated that this has led to improved systems and processes in their facility.

Secret shopper component allows in-store cutting and displays to be monitored and benchmarked.



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<sup>1</sup> Anything below 99% threshold for DNA sampling and 95% product traceability/authenticity is considered a non-conformance - which would immediately prompt an investigation and corrective action