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CASE STUDY

Featured Technical Application Scientist: Gayoung Kim

How a TAS in Seoul, South Korea, helped identify inferior counterfeit products disguised as Lipofectamine RNAiMAX Transfection Reagent

Introduction

The production and sale of counterfeit brand-name handbags and watches is a worldwide criminal enterprise that hurts purchasers of the lower-quality products primarily in the wallet. But what if the fake product is a reagent necessary for potentially life-changing scientific research? Inferior, diluted, or mislabeled reagents can produce negative results and jeopardize important experiments. In 2017, *Nature* reported on the growing problem of counterfeit reagents—a global issue with particular prevalence in China. A researcher at Beijing's National Institute of Biological Sciences quoted in the article claims that solving the problem is challenging because “the potential market for FBS counterfeiters in Beijing alone could be tens of millions of yuan per year.” Unfortunately, because many factors can affect experiment results, it can be difficult to identify a counterfeit reagent as the source of a problem—finding the fakes remains a major challenge to scientists, manufacturers, and regulatory organizations.

One surprising front in the war against counterfeit science products is the scientist on the other end of the phone. When a customer seeks technical support from a product manufacturer, in the course of troubleshooting the customer's problem, a technician with the instincts of a detective may discover clues that help reveal a fraud.



Gayoung Kim is a Technical Applications Scientist in Seoul, South Korea

In this case study, we had a chance to speak with Gayoung Kim, a technical application scientist (TAS) with Thermo Fisher Scientific, the world leader in serving science. She helped identify counterfeit transfection products that were causing problems for several customers in the South Korean region she supports. Kim helps us understand how she discovered the phony products, what steps are being taken to remedy the problem, and what we can learn from her experience.

Can you tell us about your work?

I have been a TAS with Thermo Fisher for 4 years. Before coming to Thermo Fisher, I studied immunology and neuroscience and did research for 7 years. As a TAS, I support genomic products such as nucleic acid prep kits and products for TALEN-based genome editing.

You recently discovered that a customer was using a counterfeit product. Was this the first time you ever discovered a counterfeit?

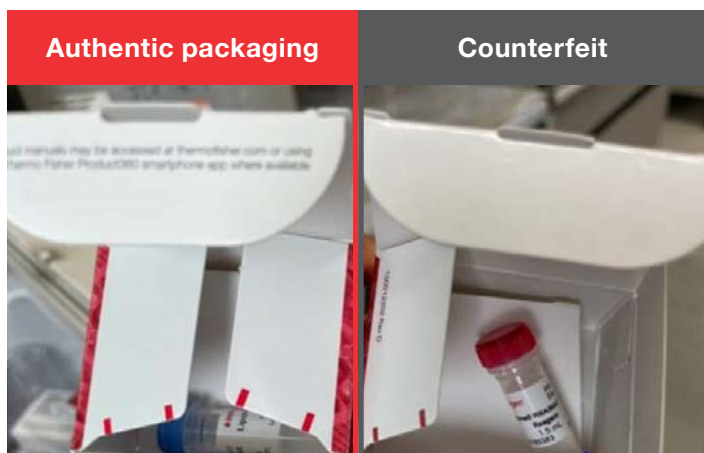
Yes, and as far as I know, this is the first time that counterfeit products have been distributed in the Korean market.

Before the incident, did you even know that there were attempts to distribute counterfeit products from Thermo Fisher?

I had no idea that counterfeit products were distributed in the market. Because our products are high quality and our customers trust them, I thought that no one would dare to make counterfeit products.

What type of problem were you trying to help a customer solve when you made the discovery of the counterfeit?

A customer using an RNA prep kit was seeing low yield and low quality of RNA, so I checked their protocol to see if they were following it step by step. Low quality and low yield of RNA is often the result of a problem in the lysis step. In that case, I will recommend that they can do more incubation in the lysis step, give it more time, and this usually enables them to see higher quality and a higher yield of RNA.



Packaging comparison note the difference in cap color on the vial and missing information on the flap of the counterfeit product box.

In the case of the counterfeit, what happened?

The customer thought they were using our high-quality Invitrogen™ RNAiMAX™ Transfection Reagent. But the yield was very low. In fact, it was zero. The customer was seeing no efficiency.

Earlier in the year, some customers had asked if we had recently changed the color of the cap on this product. I had thought there may have been an error during packaging and assembly, so I asked the customer to file a complaint through the dealer they purchased the product from. I also requested they send us product photos and ordering information, but the customers did not contact us after that.

Then in May, the customer who had the problematic results with the Lipofectamine RNAiMAX reagent also asked about the cap color. This time, I made sure to get photos of the vials, as well as the packaging and QR code. I sent the photos of the vials and boxes I received from the customer to our global tech support team. I wanted to check to see whether the cap color had recently changed or if there might be an assembly mistake.

Through the cell biology product manager based in Carlsbad, California, we learned the product was definitely counterfeit. She said that “with 100% certainty the product was not manufactured here in Carlsbad.”

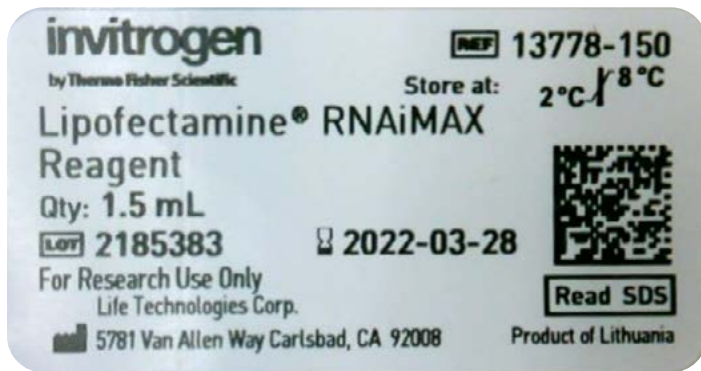
So the cap color was the clue. Were there other differences with the counterfeit packaging to identify a counterfeit?

Yes, not only the cap color, but also the label font and country of manufacture on the box were different from our product. Also, the QR codes were not identifiable.

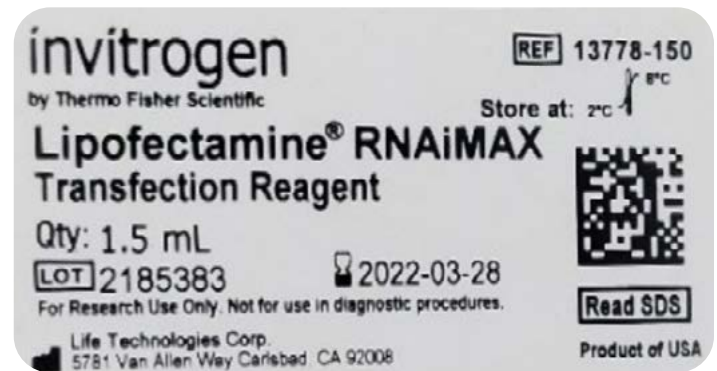
What did you do?

I immediately reported the counterfeit product to my manager. Then I called the customer and said, “I’m so sorry. This is a counterfeit product. In the future, please buy Lipofectamine RNAiMAX reagent directly from us.” And I explained how they can identify the difference between the counterfeit and authentic product.

A.



B.



Authentic Lipofectamine reagent label (A) versus counterfeit label (B) Note the difference in regulatory information, country of origin, and font style and size.

So the customer had purchased the counterfeit from an independent vendor?

Yes, in the South Korean market, customers can buy directly from Thermo Fisher or they can purchase products through a third-party vendor. In this case, after the counterfeit was identified, the customer was able to use the evidence we provided to get the product replaced. The vendor replaced the counterfeit product with real Lipofectamine reagent, and after that the customer got good results.

Did your manager take further action?

Yes, with the help of our biosciences sales and marketing teams, we investigated more cases of potential damage.

What did you find?

We were able to identify 17 customers who had purchased the counterfeit product from five different vendors. We encouraged the customers to buy the product directly from us. Additionally, we analyzed the counterfeit product to discover its components and help us understand it better.

Besides buying directly from Thermo Fisher, what would you recommend customers do to avoid inadvertently using counterfeit products?

If the price from a vendor is much cheaper than ours, that should be a red flag. We recommend checking the QR code, look for differences in the packaging, and contact your customer support team if you're not getting good results.

Reference:

1. Cyranoski, D. The secret war against counterfeit science. *Nature* 545, 148–150 (2017). <https://doi.org/10.1038/545148a>

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