

It was an arson. A double murder. And the evidence pointed to one of the two suspects. So how did the wrong person wind up in prison?

A Brockton fire and the scourge of 'twisted science.'



GLOBE OPINION

AUG 31, 2026

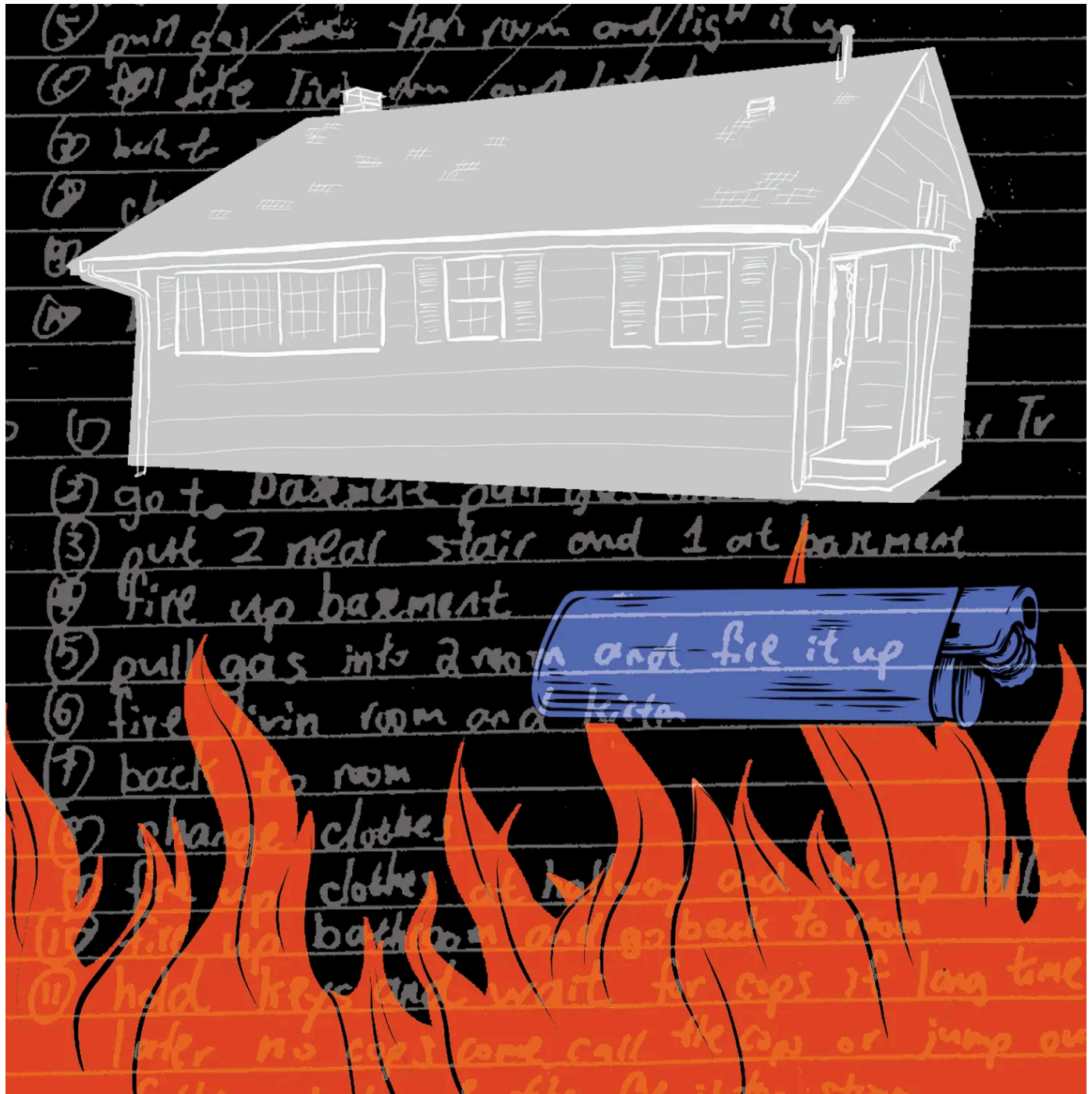


17



Share

By David Scharfenberg



BROCKTON — Firefighter Brian Nardelli was standing by the stairs in the living room when he picked up the scent.

It was hard to miss.

Gasoline.

It was the morning of April 17, 2003, and Brockton firefighters had just knocked down a blaze at the split-level ranch-style house at 102 Belair St.

They'd rescued Kenneth Choy, 16, from his bedroom window, and his aunt Frances Choy, just a year older at 17, from hers.

They'd done their best to rescue Frances's parents, Anne and Jimmy Choy, too.

Nardelli had grabbed Anne off her bed and dragged her down the steps through the acrid smoke. And he'd gone back with another firefighter to get Jimmy. But temperatures in the couple's bedroom had exceeded 500 degrees, investigators would later determine. Anne and Jimmy Choy would not survive.

Now, as the smell of gasoline drifted through the house — Nardelli wasn't the only firefighter to pick it up — it seemed clear that this was an arson case.

A murder case.

[Subscribe](#)

Firefighters gave the place a final hose-down. And the incident commander ordered everyone out of the house and called in the investigators.



Firefighters on the scene at the Choy house in Brockton. The most extensive damage was inside. George Rizer/Globe Staff

Over the next few hours, they would gather evidence that pointed pretty directly at one suspect in particular.

So how was it, then, that the wrong person wound up in prison?

IN THE LAB

This is the second installment in Boston Globe Opinion's "Twisted Science" series.

We're examining problems with forensic science. But we're staying away from the usual stuff.

We're not writing about the big, splashy lab scandals that so often land in the headlines — the misdeeds of figures like Annie Dookhan, the Massachusetts drug analyst who made up thousands of results out of whole cloth.

And we're not writing about phony “junk science” either.

There is, to be clear, a long and ignominious history of junk science in fire investigation — poorly trained investigators passing down all kinds of folklore about the supposed telltale signs of arson, from alligator-pattern burn marks to “crazed glass.”

But the worst junk — in fire investigation and elsewhere — has been purged from the American justice system.

So we're homing in on the problem that remains — a subtler and, [research suggests](#), far more pervasive one: the twisting of legitimate forensic science.

In our [first piece in the series](#), we showed how it can happen in the courtroom. In a Rhode Island murder case we examined, prosecutors contorted the meaning of a perfectly valid DNA analysis — making it seem as if a suspect who had been *excluded* by the test had been *implicated* by it instead.

In this second installment, we'll show how legitimate forensic science can be twisted before it even lands in court, in a place too often beyond the reach of judges and lawyers and criminal justice reformers — the crime lab.

We'll see how forensic scientists can make inconclusive findings seem conclusive. How they can shade results, alter the course of lives, and quietly undermine the American system of justice.

Later, in our final piece in the series, we'll examine some remedies to such oft-overlooked problems.

But first, let's go back to the Choy residence in Brockton, where the smoke is starting to clear and the case is poised for a turn.

The scenes described throughout this piece are drawn from hundreds of pages of court testimony and lab documents.

FRANCES OR KENNY?

Who would set a fire that kills their own kin?

That kind of depravity is hard to fathom.

But of the two survivors investigators encountered at the house that morning — teenagers both — Kenneth Choy seemed the more likely suspect.

He'd had a tumultuous childhood. His father had committed suicide, and his mother, unable to care for her son, had brought him halfway around the world from Hong Kong to live with his grandfather and step-grandmother in Brockton.

The transition had been rocky.

He had a difficult relationship with his grandfather Jimmy, who hit him on several occasions and reported him to police for dealing drugs. Kenny had also been accused of stealing jewelry from his step-grandmother, Anne.

And he was acutely aware that his grandparents seemed to favor their daughter, Frances.

Jimmy had recently bought Frances a car. And every year when Chinese New Year rolled around, she got more money in the traditional red envelope than he did.

Frances was in a different place. She had a job. A boyfriend. She was looking forward to attending Suffolk University in the fall.

And as a female, she was, statistically speaking, [far less likely to be an arsonist](#).

None of this was proof, of course, that Kenny had set the fire. But the evidence investigators collected from his room was highly incriminating.

A lighter. A can of lighter fluid. A rolled-up towel with a streak of soot that appeared as if it had been wedged under his door to prevent smoke infiltration. And most damning of all: two handwritten notes on stationery embossed with the header “A note from: Kenneth Choy,” with step-by-step instructions for setting the fire.

Asked about the notes, Kenny initially said that a “Black kid” at school had given him the plans and instructed him to copy them. When he was told that story wasn’t credible, he changed tack, claiming that his Aunt Frances had instructed him to write down the plans. That she was the mastermind. That she wanted to be free of her parents’ control. That she wanted to live with her boyfriend. And that she wanted Kenny’s help starting the blaze.

He hadn’t taken her seriously, he told investigators. And, he claimed, when he awoke one night to find Frances in the basement holding gas containers and demanding that he participate, he declined and holed up in his room. It was there, he said, that he heard the sound of gasoline being poured and the whoosh of a fire starting.

It was, to say the least, a questionable story. But over the course of the day, the case had taken a turn.

After investigators asked Kenny and Frances to turn over the clothes they were wearing at the time of the fire, an accelerant-sniffing dog, named Gala, raised an alert on Frances’s sweatpants — sitting to indicate she’d detected something of interest.

Here, it seemed, was physical evidence tying Frances to the crime. Lending credence to Kenny’s apparently far-fetched story.

In those early hours, investigators didn’t know why Gala had alerted to the sweatpants — didn’t know what she had smelled. There was no way they could. Lab testing is required to determine what, if any, substances are on a piece of evidence.

But the dog’s alert was reason for suspicion.

In a car ride to the hospital, where Frances's father was close to death — she'd wail, family later said, when she had to take him off life support — investigators pressed her on the sweatpants.

And later, in an hours-long interrogation at the police station, they confronted Frances with Kenny's story. They insisted that they'd found gas on her pants.

Frances denied involvement in the fire over and over again. But she seemed overwhelmed by the situation. "I feel like a ghost is doing this," she said at one point, invoking a Chinese idiom used to describe circumstances beyond belief.

Eventually, according to the police's account — they didn't record the interrogation, which would become a point of contention — she fessed up twice to a role in the fire, only to immediately retract her confessions.

Those momentary confessions featured heavily in Frances's eventual trial. And the defense did all it could to neutralize their effect. One of its expert witnesses, psychologist [Richard Ofshe](#), testified at length about the [phenomenon of false confessions](#). About the pressure cops can put on suspects. About the way interrogators will suggest they can get a reduced sentence for a suspect who comes clean. About how an innocent person can come to believe that their only way to avoid heavy punishment is to admit to a crime they didn't commit.

But if the defense made a reasonably good effort to cast doubt on the confessions, it struggled to get around another problem.

Days after Gala, the accelerant-sniffing dog, alerted to Frances's gray polyester sweatpants, the Massachusetts State Police Crime Lab had tested them.

And its findings suggested that the cops who'd grilled Frances on the day of the fire had been correct in their assumption about what Gala had found.

There was, the lab report stated, a "gasoline residue" on the pants.

THE TEST

The evidence arrived at the crime lab in Sudbury in 1-gallon metal cans.

In one can, Item 1: Frances Choy's sweatpants.

In another, Item 2: Anne Choy's nightgown.

And so on.

RECORD OF EVIDENCE SUBMITTED	
Please list description and origin of <u>each</u> item separately	
1. (1) gallon can containing sweat pants	11.
2. (1) gallon can containing sweat pants	12.
3. (1)	
4. (1)	
5. (1)	
6. (1)	
7. (1)	
8. (1)	
9. (1) quart can containing glass vial w/liquid	19.
10.	20.

Examination

Item 1-1-Gallon metal can marked "#1-Good Samaritan ER- sweat pants" This item contained/consisted of one pair of gray stretch style pants labeled "100% polyester, NEW MOVES" having a smoky odor

Heather Hopp-Bruce/Globe Staff; Handout

There were samples of yellow liquid — suspected gasoline — taken from a couple of old Sprite bottles found on the basement steps.

And there were two plastic disks — melted containers that had once held gasoline, investigators surmised — found on the living room stairs, where Firefighter Nardelli picked up the scent, and in Jimmy and Anne Choy's bedroom.

The man who took custody of all of this evidence was John Drugan.

A graduate of Merrimack College, he'd been at the lab for about 18 years at that point. And he knew the cops, knew the prosecutors.

He was old-school.

By the time of the Choy fire, he'd worked his way up to supervisor of the lab's small arson and explosives unit.

And on the witness stand, he explained the lab's procedures.

When a case came in, an analyst would pop open an evidence can and take a whiff.

Then they'd suspend a charcoal strip above the item — a piece of clothing, perhaps, or a chunk of wood from the fire scene — seal the can, and heat it in an oven overnight.

Any ignitable liquids trapped in the sample would gradually convert into a gaseous state and get captured by the charcoal strip above.

The next day, the analyst would dip the strip into a solvent, pulling out any ignitable liquids.

Then the solvent mixture would be injected into an instrument — actually, two connected instruments — known as a gas chromatograph-mass spectrometer. And those instruments would spit out reams of data — much of it showing up in EKG-style charts with a series of peaks.

The analyst would put an ignitable liquid, like gasoline, through the same machinery under the same conditions to produce a comparison sample. Then they'd compare the readouts. If the data matched, they had a positive finding. If it didn't, they did not.

In the Choy case, as Drugan would explain in court, the lab identified a “gasoline residue” or “weathered gasoline” — that is, partially evaporated gasoline — on Frances's sweatpants.

Frances's defense attorney, Joseph Krowski, would take pains to point out that there was no way to tell how this “gasoline residue” wound up on the sweatpants. And it was

a reasonable point to make: A person can easily spill gas on their pants while filling up the tank of their car; Krowski suggested that a firefighter with oily gloves might have transferred the stuff to Frances's sweatpants when he was helping her down the ladder from her bedroom.

But the defense didn't challenge the underlying finding — that what was found on her pants was a gasoline residue.

Krowski had petitioned the court for money to pay for a chemistry expert of his own. But the expert he had in mind was from out of state, and the court told him to find someone cheaper in-state. When he was unable to do so, he should have appealed the judge's ruling. But he didn't. And he went without a chemistry expert.

That was a mistake.

An expert taking a close look at the data might have seen how the science was twisted. How inconclusive data had been made to look damning. How justice had been denied.

THE PROBLEMS

I asked two forensic scientists to examine the lab data in the Choy case: [Eric Hazelrigg](#), a professor at Virginia Commonwealth University and former analyst in the State of Virginia's forensic science laboratory, and [Glen Jackson](#), a professor of forensic and investigative science at West Virginia University and cofounder and co-editor-in-chief of the journal *Forensic Chemistry*.

Jackson went so far as to review the data while “masked” — meaning he didn't know anything about the case in advance. There is a rich scientific literature demonstrating that analysts who know something about the particulars of a case, and about who investigators suspect of committing a crime, can produce biased analyses.

Hazelrigg and Jackson came to the same conclusion in this case: The lab should not have issued a positive finding for gasoline — or a “gasoline residue” — on Frances's

sweatpants.

To be clear, this was not a “junk science” case.

Drugan is a trained chemist. He ran legitimate tests. And the result was a profile that looked, on the surface, as if it might include gasoline.

But there were problems.

First, as Jackson explained to me, the data was just too messy to conclude that gasoline was present.

There were all sorts of chemicals in the sample, many of them likely formed through a process known as pyrolysis: the heat of the fire breaking down household materials and producing a wide range of chemical compounds that could have landed on the sweatpants — including some of the *very same compounds that appear in gasoline*.

The potential for pyrolysis to interfere with an analysis was well known at the time. The gold standard for fire debris analysis — a guide known as ASTM 1618 developed by subject-matter experts — spelled it out.

Now, in fairness, the research on *just how much* pyrolysis can cloud an analysis wasn't as fully developed then as it is now. But in 2003, Jackson said, a conservative analyst would have said there was too much interference to identify gasoline.

This was a red flag and Drugan, it appears, chose to ignore it.

There was another problem.

The sample may have looked *on the surface* as if it could include gasoline. But the ASTM 1618 standard in effect at the time made it clear that analysts cannot just rely on a surface-level examination of the data. To identify gasoline, they had to dig deep and confirm certain underlying patterns in the data.

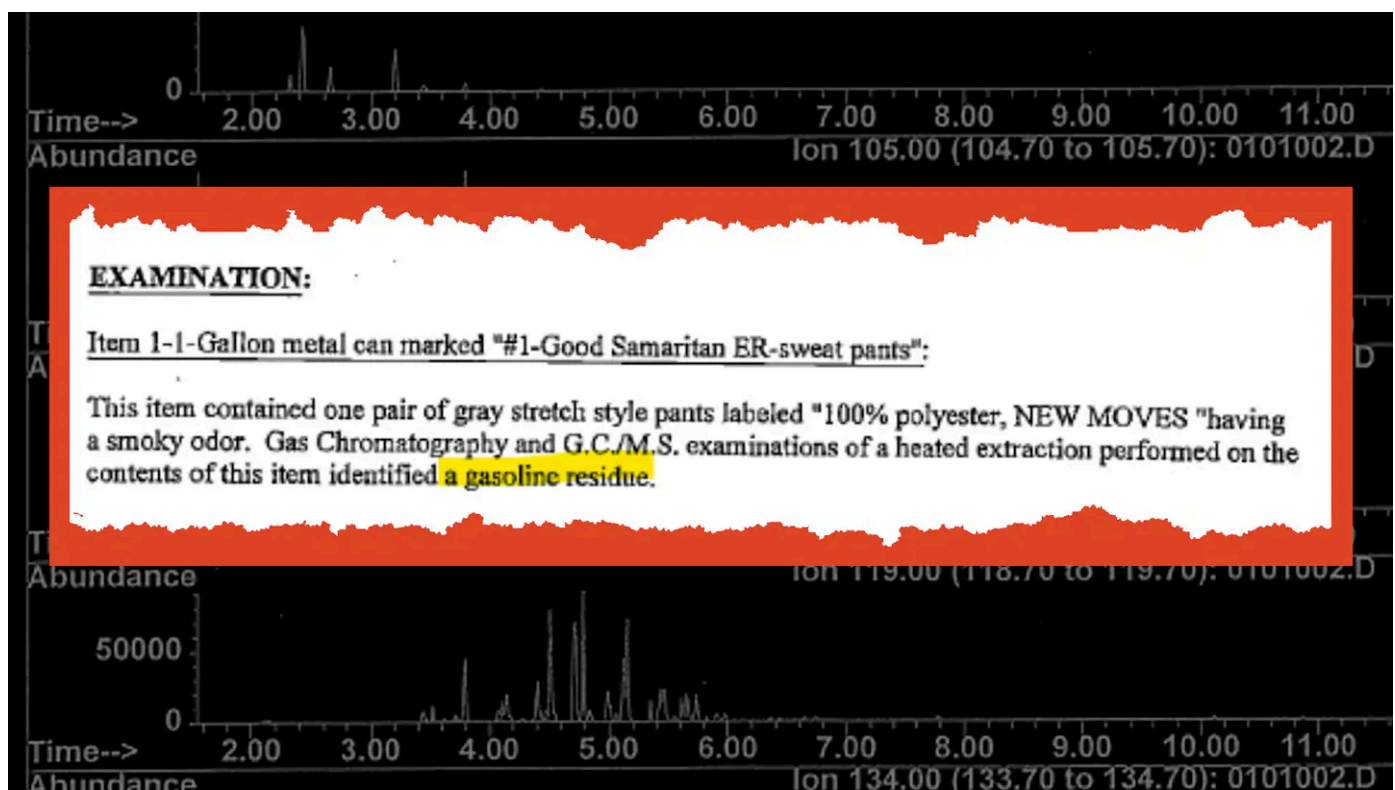
And in the Choy case, the data did not include some key patterns.

Hazelrigg, the Virginia Commonwealth professor, told me that without these key patterns, the data was too shaky for any kind of definitive conclusion. Too shaky to serve as the basis for a conviction.

If he'd been an expert witness in the Choy case, Hazelrigg said, he would have told the court that it needed to look elsewhere to determine the guilt or innocence of the accused. He would have been asking "What the hell is the *other* evidence in this case?"

But if the evidence for gasoline on Frances Choy's sweatpants was, at best, inconclusive, Drugan's lab report did not reflect that. The document made a definitive declaration. There was a "gasoline residue" on Frances's pants, it said.

Cut and dried.



Heather Hopp-Bruce/Globe Staff; Handout

In retrospect, this finding looks even more flawed than it did at the time.

Today, when forensic scientists are examining a piece of clothing worn by a suspect or a chunk of wood from a fire scene, they're looking not just for the presence of certain

key chemicals in gasoline. They're also looking at the *proportions* of those chemicals — making sure they match the proportions in gasoline.

And in the Choy case, Jackson says, the proportions in the sweatpants sample were way off.





Frances Choy was handcuffed to a railing at one point during her interrogation.
Handout

As he and I talked on a video call, he highlighted one key chemical compound, saying the proportion was nowhere near where it should be for gas. Pointing at the relevant peak on one of the EKG-style charts in the data, he said: “It’s 10 times too big. *Ten times too big*. I can’t tell you how bad that is.”

In sum, Drugan did real chemistry.

He got real results that bore some resemblance to gasoline.

But by the standards in effect at the time, he could not identify gasoline in this case. When he did anyway, he was twisting the result. He was distorting legitimate science — with life-altering consequences.

And modern analytical methods — examining the proportions of chemicals in the sample — confirm just how flawed Drugan’s findings were.

Drugan, who now runs the lab for the Boston Fire Department, declined to comment for this story.

His former employer, the state crime lab, provided a written statement, saying that while it is “unable to comment on specific cases,” it “remains committed to conducting fair and impartial evidence analysis which is presented and scrutinized in thousands of court cases each year.” The statement emphasized that the lab has “maintained national accreditation for more than two decades.” And it said the lab’s work reflects the values of “scientific excellence, objectivity, and integrity.”

FREEING FRANCES CHOY

Kenneth Choy faced a trial of his own for the fire that killed his grandparents; the State alleged that he'd conspired with his Aunt Frances to set the blaze.

His lawyers, though, laid the blame squarely on Frances. And in 2008, he was acquitted.

Later, he returned to his native Hong Kong.



Frances Choy, 17, shown with her attorney Joseph Krowski, during her April 18, 2003, arraignment at Brockton District Court in connection with the fire. (Tom Landers Photo)



Kenneth Choy, 16, shown with his attorney Frank Spillane, during his April 18, 2003, arraignment at Brockton District Court in connection with the fire. (Tom Landers Photo)

Frances wasn't so lucky. After two mistrials, a jury convicted her of murder and arson in May 2011. And she was sentenced to life in prison.

She did what she could to build a life behind bars. She earned a sociology degree, graduating magna cum laude. She worked as a sous-chef. Helped to raise service dogs.

But all along, she held out hope for exoneration.

In time, a new legal team — court-appointed attorney John J. Barter and later, the director of the Boston College Innocence Program, Sharon Beckman, and several of her students — dug up a raft of evidence suggesting Frances had been wrongfully imprisoned.

And in 2020, some 17 years after fire tore through the Choys' split-level ranch-style house on Belair Street, Superior Court judge Linda Giles issued a sweeping decision overturning Frances's conviction.

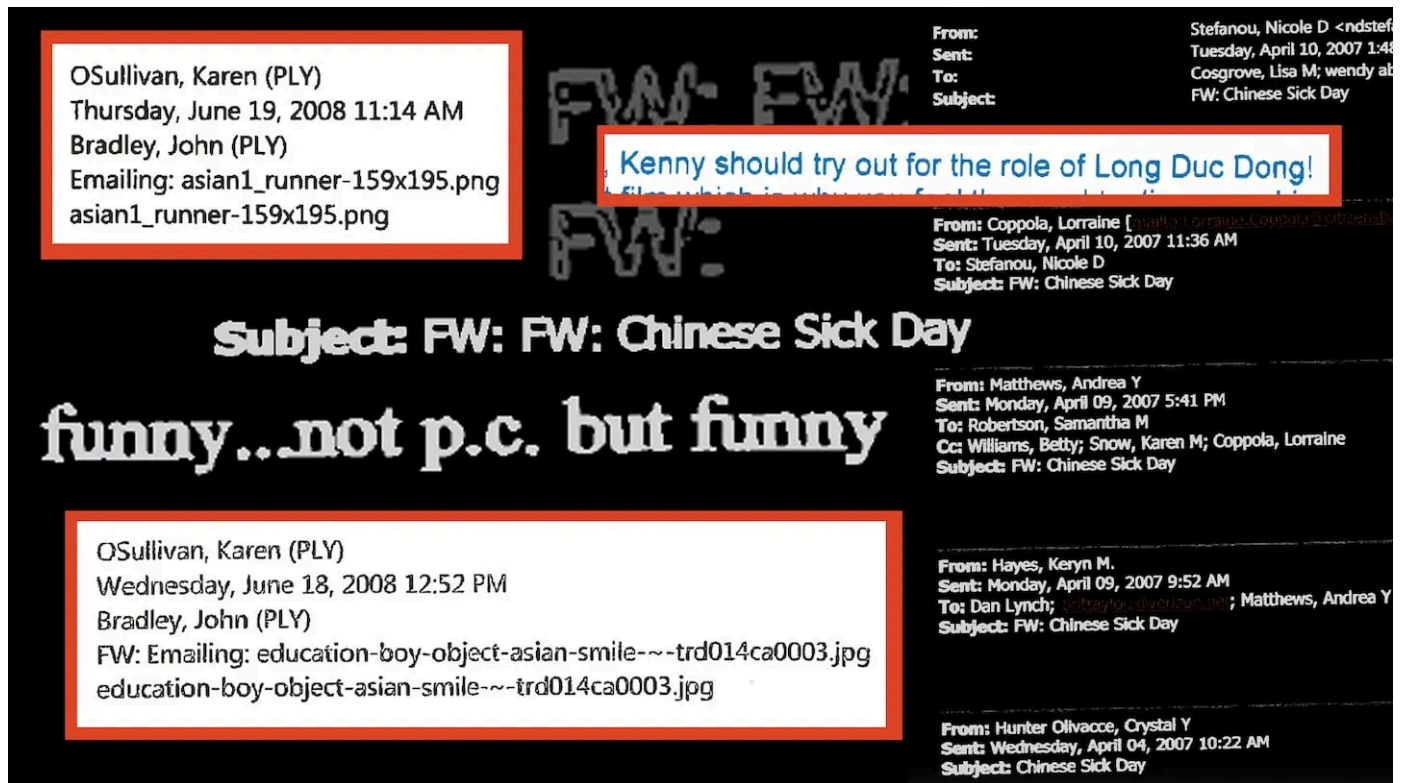
Giles pointed to a host of problems with that conviction.

The defense, for instance, had failed to fully investigate a key witness — a friend of Kenny's who later disclosed that Kenny had boasted about setting the fire that killed Anne and Jimmy Choy.

And there was some worrisome conduct on the prosecution side, too.

Plymouth County assistant district attorneys John Bradley and Karen O'Sullivan, who handled the case, failed to disclose evidence that Jimmy Choy, Kenny's grandfather, had reported him to police for selling drugs — a potential motive for setting the fire.

The prosecutors had also exchanged a series of emails trafficking in Asian stereotypes. There were caricatures of Asians speaking imperfect English. And one message compared Kenny Choy, their own star witness against Frances, to Long Duk Dong, a notoriously stereotypical character from the 1984 film "Sixteen Candles."



Heather Hopp-Bruce/Globe Staff; Handout

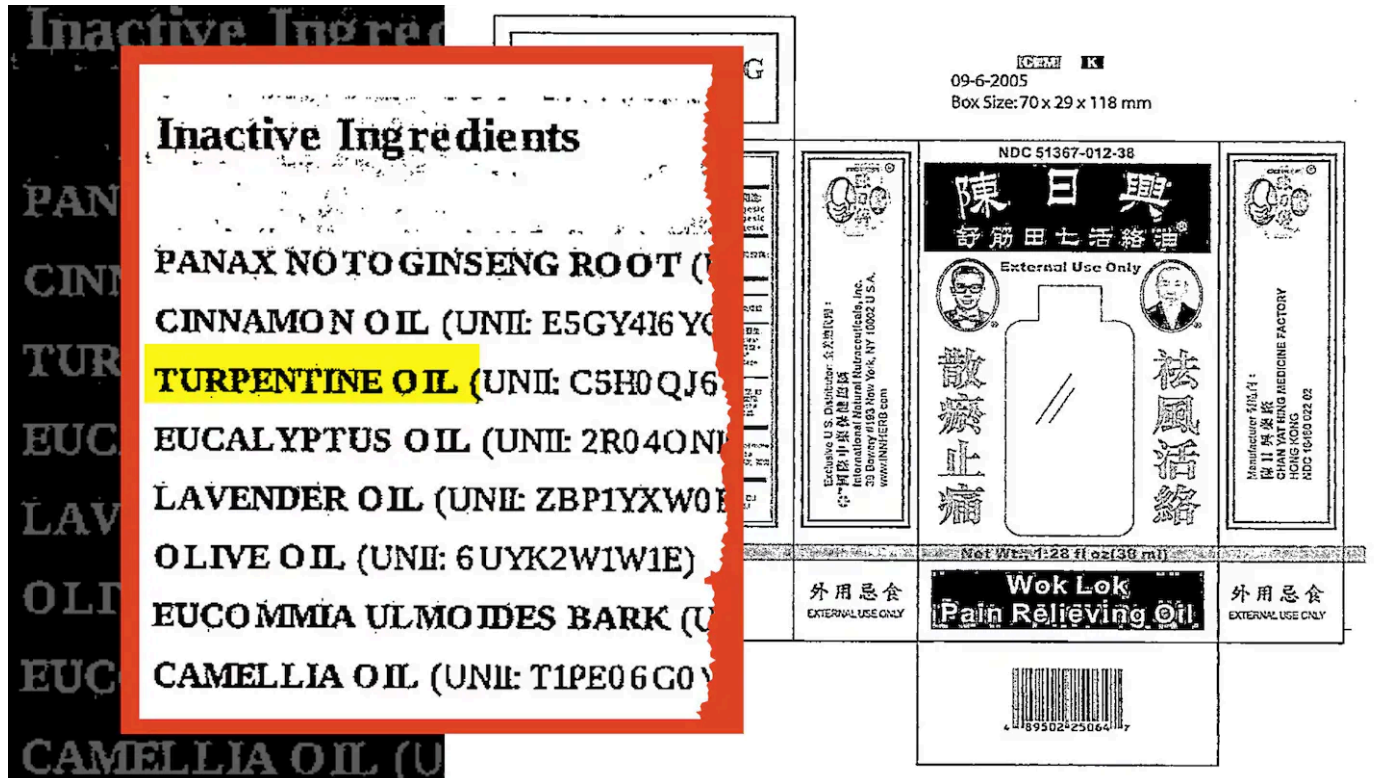
O'Sullivan is now a prosecutor in the Bristol County district attorney's office. I asked that office if it had any comment or if O'Sullivan wanted to speak with me. I got no reply. Bradley, who is no longer with the Plymouth County district attorney's office, did talk to me, and he insisted that the emails were just harmless jokes. But the court didn't see them that way. And Bradley and O'Sullivan are now facing potential suspensions of their law licenses for sending the emails and for other conduct in the case.

Judge Giles, in her ruling, also drew attention to the forensic science issues in the case.

It was clear, she wrote, that the state crime lab's identification of a "gasoline residue" on Frances's sweatpants was important. "The Commonwealth's closing argument," she noted, "referred to the 'gasoline' or 'gasoline residue' on the pants of Frances Choy repeatedly." But the defense had failed to adequately pursue an expert chemist who could push back on the crime lab's report.

Years later, Frances's exoneration team did hire a chemist, Susan Seebode Hetzel. And she sorted through the testing data and identified some of the problems with Drugan's finding of a "gasoline residue," demonstrating, as Giles wrote, that the original defense team "could have presented relevant and material exculpatory scientific evidence" if it had "located and retained an expert."

Hetzel made one other argument that the judge didn't mention in her decision: Frances often rubbed a topical analgesic into her legs to ease the pain of standing all day for her retail job — a product that included turpentine oil, according to the packaging. And Gala, the accelerant-sniffing dog, had been trained to detect turpentine.



Heather Hopp-Bruce/Globe Staff; Handout; Adobe

The lab, to be clear, would not have confused this analgesic for gasoline. The two substances would look very different in the data.

But here, at least, was a plausible explanation for why Gala had alerted to Frances's sweatpants in the first place and helped set the case against her in motion all those

years ago.

After Frances was exonerated, she filed wrongful conviction lawsuits against several parties. Settlement terms are mostly private, but she seems to have won substantial recompense.

One entity, the City of Brockton, said it agreed to pay her [\\$3.75 million](#).

Choy is living and working in the Boston area these days. And she's chosen a private life. She declined to be interviewed for this story.

But her ordeal offers some important insights into the workings of the American justice system — and the often inscrutable practices of the American crime lab.

There are ways to make those practices more transparent. To ensure the science is communicated in a straightforward way. And we'll get into some of them with the final installment in our series.

First, though, there is a little more to say about how good science can get twisted; about how even the most advanced, cutting-edge forensics can be manipulated.

That will be Part 3 of our series.

This article originally appeared on [BostonGlobe.com](#) on August 31, 2026.

This Substack is reader-supported. To receive new posts and support my work, consider becoming a free or paid subscriber.



Subscribe



17 Likes

← Previous

Next →

Discussion about this post

CommentsRestacks



Write a comment...