

MONTHS AND MONTHS
OF LABOUR FOR NOTHING,
ONLY BECAUSE THAT
BLOODY KIT WAS
RUBBISH!



It can happen to any lab

The Kits Are Not Always Alright

Even the professor suffers when his colleagues are forced to work with sub-standard lab supplies. A real tale of woe by Axel Brennicke, University of Ulm, Germany.

Daniil is swearing in Russian! Dré is cursing in Afrikaans. Mizuki is calling upon the Japanese Gods. Dagmar is uttering German obscenities as she chucks her pipette away. Cheery natured Sabine is the only one who optimistically comments "It'll work again one of these days".

The focus of foul language is the completely trivial PCR. Nothing works. It's been fourteen days and still no result!

They've tried everything in the lab. Produced new DNA, used bought DNA, changed the primer. They've ordered, measured and tested new primers; changed the water. Nothing! The gel is still as clear and clean, as if the PCR had never been started.

Oddly enough, the day before yesterday it worked with the kit from the lab next-door! A thick fat band appeared in the gel, just as it's supposed to. Our kit in comparison produced nothing!!

The morale of the group is now rock bottom. It doesn't take much for one of them to break down in tears, or another to start shouting. Understandably so, the PCR is, after all, only a small simple step in the complex system of experiments, which ought



"Where the hell are the bands in lanes 4 and 5?"

to work without any of this grumbling and griping.

Is the Taq poor? We use the neighbour's – nothing. We crosscheck the Taq polymerase from our kit with the buffer from the neighbour's kit – it works. So the Taq

isn't to blame, it can only be the buffer in our kit.

Right at the back of the fridge, there are the dregs of a buffer from an old PCR kit. We get this out and try it. A miracle, a plump fragment shines back at us out of the gel.

Therefore, it's definitely the buffer in the new kit. No doubt about it! I reach for the phone and dial the manufacturer's number. After listening to the shopping-mall music in a queuing system for the third time, I finally get through to someone who admits he *could* be remotely responsible.

"Ah yes, the PCR kit... The buffer solution, I see", the customer service agent could just as well be selling vacuum cleaners as he drones into the handset, "No problem, we'll send you a replacement immediately. We'll send you a new buffer at no extra expense".

"And what about the Taq that we have used? Through weeks of trial and error we have wasted a tremendous amount of Taq. Then there are all the other chemicals, not to mention lost time."

"Okay, then we'll also include some new Taq polymerase at no extra cost"

We query whether the company is aware of the problem with this PCR kit, or even this batch of the kit. The answer is ... evasive. At the other end of the line, no information can be provided about the kit, only that all products would have been thoroughly tested and checked in their own labs.

Continued questioning as to whether other customers have already experienced problems with this batch number, is again met with

a vague response, claiming that their company products are usually completely reliable and provide superior performance.

The new kit arrives and, hey presto, the PCR works tip-top! Thick fat blobs in the gel. What a wonderful sight for sore eyes.

However, we're still left wondering if our colleagues from Würzburg, Berlin, Bochum or Rostock *had* actually already told the supplier that these batches of PCR kits are rubbish and don't work. This company justifies selling us their expensive kits by arguing that long term this saves more time and is subsequently cheaper than if we mix all the buffers ourselves and mess them up from time to time. The same company, which had to be pressurised into sending a replacement, and didn't even include a freebie.

Forget it! What's important is that the PCR is working again and by jove, it certainly does. No *hint* of a problem. Finally, some progress can be made. Cut the bands out of the gel and isolate the DNA using the Elution Kit. Use the control gel to check how much DNA has been yielded.

The result? Nothing! No more DNA! After a further few days of experimenting the morale has dropped dramatically again. All buffers are changed, new agarose bought and ready-made gels borrowed from the neighbouring lab. The PCR products are always there but have disappeared again after each preparation with the Elution Kit. After a week, it is obvious that the Kit is rubbish!

The super-expensive columns are from a different manufacturer to that of the PCR kit. So, once again we pick up the phone; back to square one. At least here they admit that they have switched their supplier. A cheaper company from Lithuania or Estonia is now producing the columns.

However, of course everything is thoroughly tested by the parent company; we are reassured by a feminine voice at the other end of the line. And no, this is a new problem; no other customers have experienced difficulties with this or any of the other batches.

New columns are sent in replacement and function pretty well. Not as good as the ones we used to get before the suppli-

ers were bought out by a major US group. But hey, at least not *all* the DNA disappears into the Nirvana of the column volume.

Our funding agency expects a report on the progress of work. At the same time colleagues enquire how the experiments are going and what has materialised. It's embarrassing to have to say, that not even the PCR functioned and that we took a couple of weeks to figure out and resolve the problem. However, that is acceptable because everyone of us is in the same boat. Such are the daily challenges to overcome the pitfalls of complexity.

Much worse is the fact that time is ticking away for PhDs and post-docs. They have to produce results; otherwise, all too soon they are too old for a decent job or miss the train to the next limited contract. Moreover, time has definitely run out for the grad students who record in their thesis that they tried to determine the failures in the PCR and in the DNA elution process – only to finally find the fault lay with the manufacturer. Sure that's a result but no real scientific progress, which one can justifiably defend in a thesis.

You'll soon find out that you are not alone once you openly tell colleagues that you had problems with your PCR and that finally the firm's batch was rubbish. Empathy is abundant, everyone has experienced these problems. One colleague in Berlin says they have also had the same problem. They have also told the manufacturer and quite readily received a replacement. Another colleague from London complained to the manufacturer of the columns because they lost everything in the columns whilst extracting DNA from gel pieces. Colleagues in Stockholm and Barcelona report the same experiences and that they have also complained to the same manufacturers.

Each one of them received exactly the same reply: No, that's new to us! No other customer has reported that before. The problem can't possibly lie with our product; we are continually performing thorough tests in our own labs before anything is distributed to customers.

Conclusion: The manufacturers lie over the phone, without even blushing. It wouldn't enter their head to inform their customers if a batch has failed and is no longer useable.

In the laboratory, everyone tends to blame themselves when something doesn't

work, believing they might have made a completely stupid mistake. Indeed that does often happen but it's also quite often *not* the case. More often than not, these days! During recent years the cause has more frequently been sloppy work by the makers of these "wonder kits" rather than being down to the forgetful or chaotic "wonder kids" in the lab!

Mistakes can happen, sure enough, but the problem here is misplaced morals!! Not even when questioned directly, will the companies assume responsibility and admit their mistakes. The "generous" replacement of a malfunctioning product is ridiculous. The companies wouldn't even dream of offering compensation for lost time and

work in the lab, let alone costs for materials, e.g. gels, other kits ..., salaries for scientists, technicians, post-graduates. Even the doomed thesis.

The companies' strategy is silence. Make out they're innocent when

really they know full well that a batch is bad. They hope that the customers, we scientists, don't talk with one another; hope that their reputations remain unblemished so they can continue selling; hope that some labs don't even find the flaw and are subsequently forced to order a new batch because the poor kits are used up quickly with all the testing.

It would be a huge step forwards if the firms would just pick up the phone and inform the customers who have received a botched delivery; tell them *it was rubbish, chuck it away, you will receive a fully functional replacement the day after tomorrow*. A recall action wouldn't be necessary, that would just incur more costs and we would gladly pay for the disposal – that, after all, is the least of our problems. The main hurdles are lost time, wasted work and crushed enthusiasm.

We, the customers, should generate a black list in which bad experiences with companies are recorded and which is accessible to all scientists. And we would gladly pay *marginally* more for a supplier who could justifiably earn our trust (the emphasis being on "marginal" because according to bureaucratic guidelines we are obliged to go for the cheapest deal). The manufacturer could really earn Brownie points in this way. I dare say that such a company could even blast the rest of the competition into the universe. I'd like to hope so.

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