



Agilent Case Study: Dako Omnis

## Doubling Slide Volume with Existing Resources

Agilent  
**Dako**

### Pathology lab doubled the slide volume without increasing instrument or staff count

Nestled in the picturesque area of Teramo, Italy, a medium-sized laboratory has achieved what many would consider an impossible feat. Facing a significant growth in test volume, the lab has managed to maintain their commitment to serving the community and providing accessible healthcare services to all, without adding a single new member to its staff. This remarkable accomplishment was achieved by optimizing workflows through instrumentation and processes with the exceptional dedication and collaboration of the team.

Read here how they managed the challenges.

#### Facing the challenges

The pathology laboratory, ASL Teramo, directed by Dr. Quaglione, has become a benchmark for efficiency and excellence. Serving a population of approximately 800,000 inhabitants, this public lab has undergone significant changes to meet the increasing demand on test volume and complexity. In 2017, the lab was processing around 5,000 immunohistochemistry (IHC) slides annually, but now the lab handles an impressive 12,000 IHC slides each year. At the same time, they have also managed to in-source the molecular ISH test for *HER2*.

#### Collaborative efforts

One of the most significant changes was the implementation of more efficient workflows. Dr. Quaglione recognized that Dako Omnis offered several key advantages that aligned with the laboratory's needs. Dako Omnis had the capacity and flexibility to support the lab in managing an increasing workload efficiently. Additionally, the system's ability to deliver consistent, high-quality results, combined with its reliability and efficiency was important for the laboratory to maintain its high standards of diagnostic accuracy and speed.



Location: Teramo, Italy

Lab type: Public pathology lab

Volume: 13,000 cases/year

Staff:

- one director
- one technical coordinator
- nine technicians
- four medical pathologists
- one biologist
- two laboratory assistants
- three administrative staff

Stainers: One Dako Omnis—operated by two lab techs and one backup

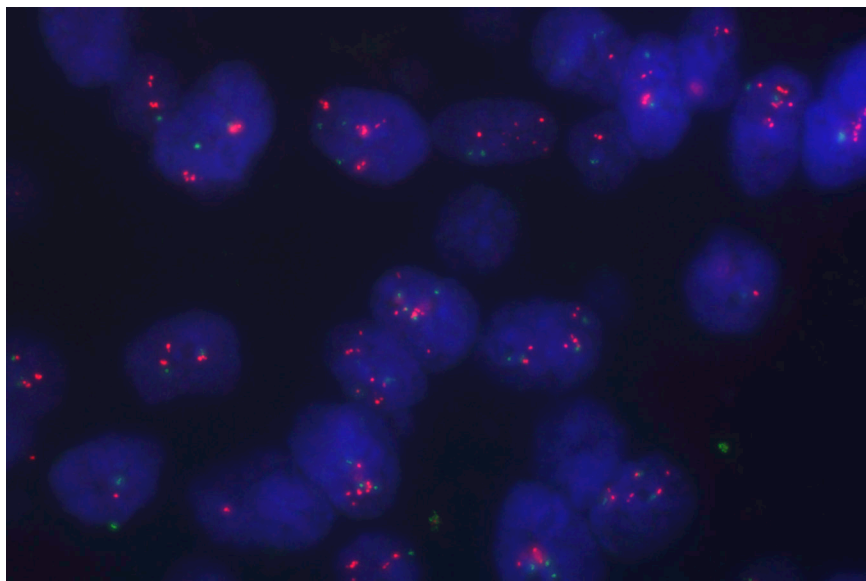
Operating hours: 8:00 a.m. to 7:00 p.m.

By analyzing every step of their staining process, the team identified areas where time could be saved. This included optimizing specimen preparation, reducing redundant tasks, and automating certain processes. Understanding that the existing staff would need to adapt to new workflows, they organized comprehensive training sessions to familiarize the team with the improved workflow capabilities of the Dako Omnis platform. The result was a team that was not only proficient but also confident in handling the increased test volume.

### Bringing *HER2* ISH testing in-house

The lab's commitment to serving the community is something they take very seriously. A prime example of this was the decision to in-source breast cancer cases.

The driving factor that made the laboratory in Teramo switch its *HER2* ISH testing from external to internal was a need to significantly reduce the turnaround time (TAT) for diagnosis. Previously, the TAT for these tests was quite lengthy, ranging from approximately 17 to 21 days, which could delay critical treatment decisions for patients. By bringing the *HER2* ISH testing in-house and onto Dako Omnis, the laboratory was able to streamline the process and reduce the TAT to a much more efficient 7 to 10 days from arrival of sample to final report.



**Figure 1.** Breast carcinoma stained with *HER2* IQFISH pharmDx™ (Dako Omnis) with triple (Red/Green/DAPI) filter. Tumor cells show *HER2* gene amplification.

The optimization and validation process for implementing *HER2* IQFISH pharmDx on Dako Omnis only took about a week. Identifying the most suitable protocol for the lab's specific samples required several trials and adjustments, where Agilent provided extensive support throughout the complex process of optimization. This collaboration ensured a smooth and efficient implementation of the new *HER2* IQFISH testing protocol.

### Win-win situation

The decision to internalize *HER2* ISH testing brought significant benefits to both the laboratory and its patients. The faster TAT allowed for quicker initiation of appropriate treatments, which is crucial for improving treatment outcomes for breast cancer patients. Additionally, the reduced waiting time alleviated the anxiety and stress that patients often experience while awaiting their diagnosis.

From a financial perspective, the switch resulted in approximately 150 fewer costly external consultations. Thus, the change not only improved operational efficiency but also made the process more cost-effective.

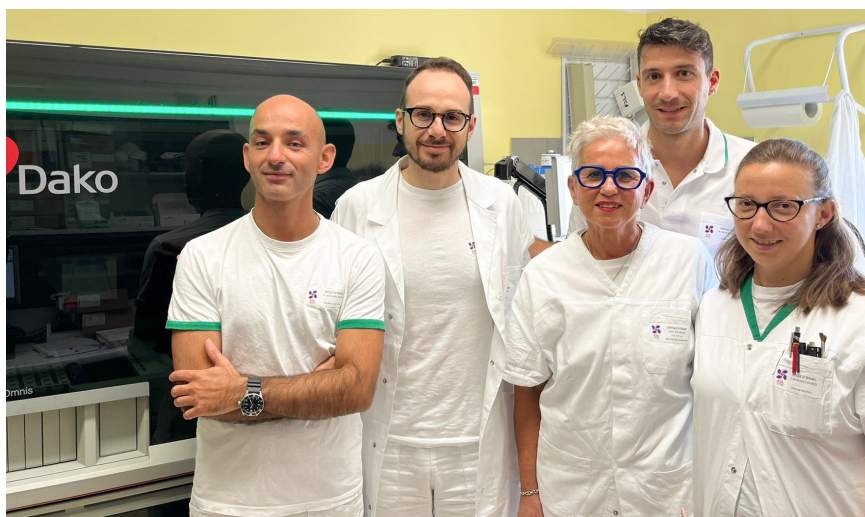
Finally, both lab technicians and pathologists took pride in their work, as they were able to perform the new test themselves. They are now daily performing many advanced staining assays including IHC, CDx (both PD-L1 and *HER2*) CISH (Eber), and FISH (*HER2*); all done on one Dako Omnis. Their expanded skillset contributes to the lab's mission to provide accurate diagnostic services and effective healthcare for the people they serve.

*"Overall, the faster turnaround time has enhanced our ability to provide prompt and effective care, significantly benefiting our patients both medically and emotionally."*

– **Dr. Gina Quaglione**  
Laboratory Director

## Tips for labs

When asked about how they managed to make all these changes, and what advice they would pass on to other labs they graciously shared a few essential tips: Be courageous and embrace the change with confidence. Transitioning can be daunting, but trust in the process and the potential improvements it can bring to your workflow and diagnostic capabilities. Share knowledge openly within your team by discussing experiences, challenges, and successes. This collective knowledge helps everyone adapt more quickly and effectively. Collaborate fully with your team and any external support, such as technical advisors or representatives from the solution provider. Collaboration ensures everyone is on the same page and contributes to a smoother transition. By being courageous, sharing knowledge, and collaborating fully, your lab can successfully navigate the switch and profit from the benefits of the new system.



**Figure 2.** Teramo Pathology Laboratory represented here by: **Davide Cinalli**, technician coordinator, **Andrea Capece**, pathologist, **Gina Rosaria Quaglione**, laboratory director, **Massimo De Antoniis**, technician, **Annalisa Nespoli**, technician.

### Background story

Dr. Quaglione has transformed the ASL Teramo pathology lab by introducing advanced technologies like an automatic sectioning instrument, a self-calibrating microtome, comprehensive traceability systems, and implementing new assays on Agilent Dako Omnis staining platform. These changes have streamlined processes, reduced errors, and improved workflow. Key assays have been transitioned to the Dako Omnis system, including HER2 IQFISH pharmDx, PD-L1 22C3 IHC pharmDx, CISH (Eber), and HercepTest™ mAb pharmDx, to fully take advantage of the system's capabilities.

A collaborative approach, involving skilled young collaborators and open dialogue with colleagues, has been the cornerstone of the transformation. Feedback from technicians like Massimo and Annalisa has helped optimize new techniques and processes, which have significantly reduced turnaround times. Looking ahead, Dr. Quaglione is excited about introducing more assays on the Dako Omnis system as well as the potential of digital pathology and artificial intelligence to advance the lab's capabilities.

The innovative spirit at the ASL Teramo lab has set a new standard for diagnostic excellence, where dedication to innovation and collaboration unite efficiency and accurate diagnoses for the people they serve.

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