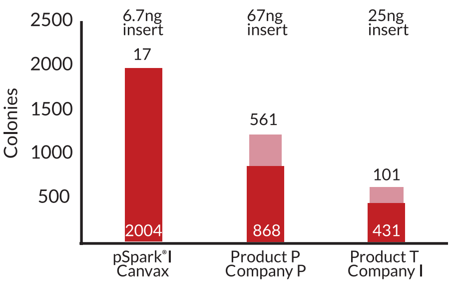
Comparison with other popular vectors:

In 2016, Canvax conducted a rigorous study where the efficiency of all pSpark® Blunt-end DNA Cloning systems were analyzed in comparison other popular cloning systems, developed almost two decades ago. In this catalog the results of pSpark® I compared to Product P and Product T are presented. If you want to review the full white paper, please visit pspark.canvaxbio.com

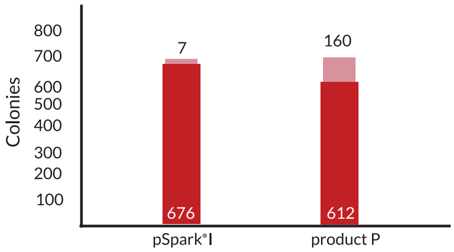
Figure 1.1: Efficiency and background



Cloning efficiency of pSpark® I over other popular cloning systems. The cells used had a cloning efficiency of 2 x 10^7 cfu/µg.

As shown in the previous figure, the background for pSpark® I is 0.8%, while in other cases, it is 40% and 20%, respectively. On the other hand, pSpark® I has an efficiency of 300 cfu/µg of DNA Insert, while other products have 13 cfu/µg and 17 cfu/µg of DNA, respectively.

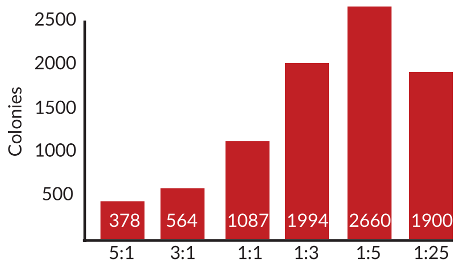
Figure 1.2: Robust and versatile



Cloning efficiency using pSpark® I with blend polymerase. The 1 kb-insert was amplified with FastPANGEA™ High Fidelity DNA Polymerase MasterMix for cloning with pSpark® I and with blend polymerase to clone with Company P. Competent cells had a cloning efficiency of 2 x 10^7 cfu/µg.

Despite the similarity of the results, it is important to highlight that PCR products, obtained with a mix of both DNA polymerases, contain a mixture of molecules with blunt ends and molecules with adenine at the 3´ends in a proportion of 30% and 70%, respectively. Therefore, pSpark® I is more robust and versatile than Product P.

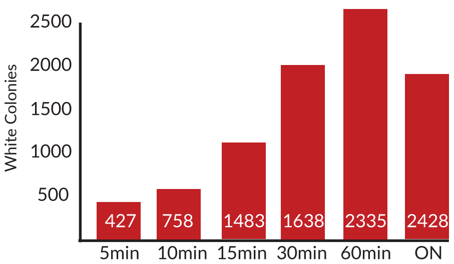
Figure 1.3: Insert amount



Number of positive white colonies obtained after ligation with different ratios of pSpark® I vector:insert. The amount of vector was the same in all cases, varying the amount of insert to achieve the vector: insert ratio identified. The background was less than 1%. Competent cells had an efficiency of 2 x 10^7 cfu/µg.

As is described, it allows obtaining a high number of colonies even using < 1 ng of insert as in the 5:1 vector: insert ratio.

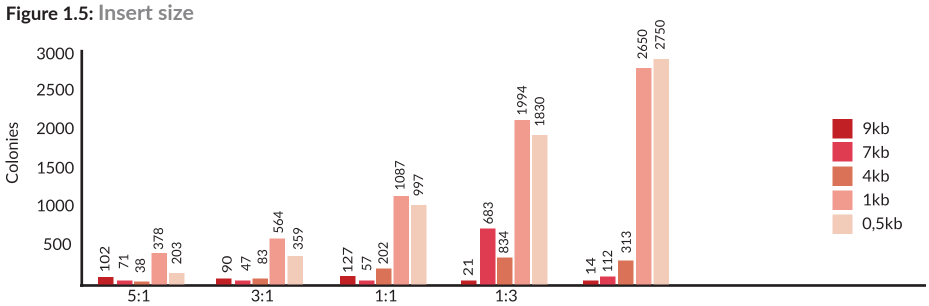
Figure 1.4: Ligation Time



pSpark® I ligation-determined efficiency in response to different ligation times. Competent cells used had an efficiency of 2 x 10^7 cfu/µg. Is possible to use pSpark® using almost any lab protocol, ligation temperature (example: 25°C-RT, 22°C, 16° or 4°C), and it could even tolerate some changes depending on the needs of each cloning task or laboratory resources.

It is necessary to emphasize that with only 5-10 minutes of ligation time, >400-700 positive colonies and a background <1% are obtained.

Figure 1.5: Insert size



Efficiency of cloning pSpark® I inserts of different sizes using different vector: insert ratios. Inserts were used 0.5 kb, 1kb, 4kb, 7kb and 9kb in the ratios indicated below. Competent cells were 2 x 10^7 cfu/µg DNA. Background was always below 1%.

As is shown, the vector: insert relationship 1:5 is the best with >2,000 positive colonies for inserts equal or < 1kb.