

INTRODUCTION

The *Prelude™* is the newest addition to Protein Technologies, Inc.'s (PTI's) peptide synthesizer family. Designed for syntheses ranging from the 5-350 µmol scale, the *Prelude™*'s six parallel reaction vessels, 8 bottle positions and 27 amino acid positions provide you with the flexibility and throughput you need to reach your peptide synthesis goals. In addition to its standard features, the *Prelude™* also offers **Single-Shot™** deliveries, **E-mail Notification**, and a **Safe Response** for interrupted syntheses. With these special features, it is easy to see that the *Prelude™* is the future of peptide synthesis—today.

Prelude™ SATISFY YOUR NEED FOR SPEED

The *Prelude™* is a fast, affordable peptide synthesizer whose fluid deliveries are designed to handle chemistry at any speed. Whether your couplings are 1 hour or 1 minute, the *Prelude™* will minimize the time spent on machine manipulations so you can get your peptide faster.

To demonstrate the *Prelude™*'s performance, an analogue of the luteinizing hormone releasing hormone¹, G-LHRH (H-GHWSYGLRPG-NH₂) was synthesized. The G-LHRH peptide is regularly synthesized on other PTI instruments as part of PTI's quality control process.

G-LHRH was first synthesized at the 20 µmol scale on Rink amide MBHA resin (0.47 mmol/g) using PTI's quality control protocol, and then using a fast protocol developed at PTI. The synthesis conditions are shown in **Figure 1** and the *RP*-HPLC² results are shown in **Figure 2**.

Using the fast protocol, the *Prelude™* has an amazing **12 minute cycle time!**

Deprotection:
20 % Piperidine/DMF, 2.5 min x 2
20 % Piperidine/DMF, 0.5 min x 2
Washing:
DMF, 30 sec x 6
DMF, 30 sec x 2
Coupling:
100 mM HBTU/400 mM NMM/DMF, 10 min x 2
100 mM HCTU/400 mM NMM/DMF, 1 min x 2
Total Synthesis Time:
6 : 40
1 : 57

Figure 1. Synthesis condition

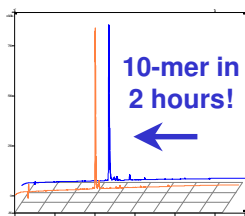


Figure 2. *RP*-HPLC comparison of G-LHRH

Prelude™ MINIMIZE WASTE...MAXIMIZE SAVINGS



Figure 3: 16 mL Single-shot™ amino acid apparatus

Use expensive amino acids without worrying about prime volumes or manual additions using the *Prelude™*'s *Single-Shot™* delivery feature! The *Prelude™* can deliver the entire contents of its special *Single-Shot™* amino acid bottle (**Figure 3**) from any amino acid position to a specified reaction vessel without wasting a drop!

To demonstrate the *Single-Shot™* delivery feature, two peptides containing expensive special amino acids were synthesized. GHRP-6³ (H-HwAWfK-NH₂) is a synthetic hexapeptide that specifically releases growth hormone in a wide variety of species *in vivo* and *in vitro*. It contains *D*-amino acids.

SIN1s315CP⁴ (H-CRRKGpSQKVS-NH₂) is a peptide that contains a phosphorylated serine. In each synthesis, 1 mL of *D*- or phosphorylated amino acid was delivered from a *Single-Shot™* bottle for the coupling reaction.

The *RP*-HPLC² results are shown in **Figures 4 & 5**.

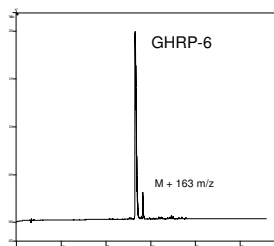


Figure 4: GHRP-6

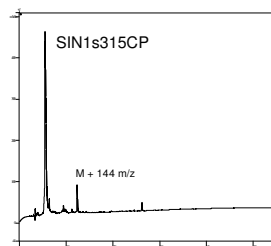


Figure 5: SIN1s315CP

Synthesis Conditions⁵: **Scale:** 40 µmol, **Resin:** Rink amide-MBHA Resin (0.47 mmol/g), **Deprotection:** 20% Piperidine/DMF, 15 min x 2, **Washing:** DMF, 30 sec x 6, **Coupling:** 200 mM HCTU/400 mM NMM/DMF, 45min x 2, **Special AA coupling:** 200 mM HCTU/400 mM NMM/DMF, 60min x 2 **Cleavage:** TFA:EDT:anisole:water (95:2:2:1), 2 hrs.

Prelude™ WORRY-FREE SYNTHESIS

With the *Prelude™*, you don't have to worry about your synthesis when you're away from the lab.

Monitor your synthesis at home or on the go with the *Prelude™*'s *E-mail notification* feature. With this feature you can monitor the status of a synthesis from your computer or cell phone. Choose to receive an email or text message:

- At the start of each cycle (**Figure 6**)
- At a specified step in a cycle
- When a user error occurs (**Figure 7**)



Figure 6: E-mail delivered at the start of cycle 2.

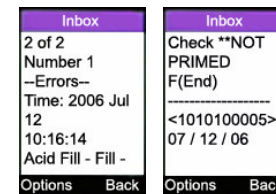


Figure 7: Text messages delivered after a user error

If your synthesis gets interrupted while you're away, the *Prelude™*'s *Safe Response* feature makes sure your reaction stays safe. The *Prelude™*'s *Safe Response* feature drains the active reaction vessel(s) and immediately washes the resin with a solvent of your choice to safeguard your reaction against side reactions and their undesired byproducts.

REFERENCES

[1] A. Arimura, H. Matsuo, Y. Baba, A. V. Schally, *Science*, **174**, 511 (1971).
 [2] Microsorb MV C18 column, 3Å, 250 x 4.6 mm; A: 0.1 % TFA in H₂O, B: 0.1% TFA in ACN, Detection 214 nm, Flow rate 1 mL/min, Gradient 5%-60%B over 55 min.
 [3] (a) B. Y. De Winter, J. G. De Man, T. C. Seerden, I. Depoortere, A. G. Herman, T. L. Peeters and P.A. Pelckmans, *Neurogastroenterol. Motil.*, **16**, 439-446 (2004). (b) R, F. Vilas-Boas Weffort, J. C. Ramos-Dias, C. Chipoch & A. J. Lengyel, *Metabolism*, **46**, 706-710 (1997).
 [4] Sequence was provided by Cancer Research UK.
 [5] Synthesis conditions are not optimized.